Self Diagnosis Supported model

SERVICE MANUAL BA-5 CHASSIS

MODEL	COMMANDER	DEST	CHASSIS NO.
KV-20FS12	RM-Y173	US	SCC-S40A-A
KV-20FS12	RM-Y173	CND	SCC-S41A-A
KV-20FV12	RM-Y168	US	SCC-S40B-A
KV-20FV12	RM-Y168	CND	SCC-S41B-A
KV-21FE12	RM-Y173	E	SCC-S38A-A
KV-21FE12A	RM-Y173	E	SCC-S38F-A
KV-21FE12C	RM-Y173	E	SCC-S38B-A
KV-21FM12	RM-Y172	MX	SCC-S39A-A
KV-21FV12	RM-Y168	E	SCC-S38C-A
KV-21FV12C	RM-Y168	E	SCC-S38D-A



KV-21FV12



RM-Y168

TRINITRON® COLOR TV

SONY®

SPECIFICATIONS

	KV-21FE12 KV-21FE12A KV- 21FE12C	KV-21FM12	KV-20FS12	KV-20FV12	KV-21FV12	KV-21FV12C
Power requirements	120-220V, 50/60 Hz	120-220V, 50/60 Hz	120V,60Hz	120V,60Hz	120-220V, 50/60 Hz	120-220V, 50/60 Hz
Number of inputs/outputs						
Video 1)	2	2	2	2	2	2
S Video 2)	1	1	1	1	1	1
Audio 3)	2	2	2	2	2	2
Audio Out 4)	--	--	--	1	1	1
Speaker output(W)	5W x 2	3W x 2	3W x 2	5W x 2	10W x 2	10W x 2
Power Consumption(W)						
In use(Max)	115W	115W	115W	150W	155W	150W
In standby	1W	1W	1W	1W	1W	1W
Dimensions(W/H/D)						
(mm)	512 x 475 x 493mm	512 x 475 x 493mm	512 x 475 x 493mm	562 x 466 x 503mm	562 x 466 x 503mm	562 x 466 x 503mm
(in)	20 1/8 x 18 11/16 x 19 7/16	20 1/8 x 18 11/16 x 19 7/16	20 1/8 x 18 11/16 x 19 7/16	22 1/4 x 18 3/8 x 19 7/8	22 1/4 x 18 3/8 x 19 7/8	22 1/4 x 18 3/8 x 19 7/8
Mass						
(kg)	24.5kg	24.5kg	24.5kg	27 kg	27 kg	27 kg
(lbs)	54 lbs	54 lbs	54 lbs	59 lbs. 8 oz.	59 lbs. 8 oz.	59 lbs. 8 oz.

1) Vp-p 75 ohms unbalanced, sync negative
2) Y: 1 Vp-p 75 ohms unbalanced, sync negative
C: 0.286 Vp-p (Burst signal), 75 ohms
3) 500mVrms (100% modulation), impedance: 47kilohms
4) More than 408 mVrms at the maximum volume setting (variable).
More than 408 mVrms (fix).

Television system

American TV standard/NTSC
PAL M, N (KV-21FE12A ONLY)

Channel coverage

VHF:2-13/UHF:14-69/CATV:1-125

Visible screen size

20" picture measured diagonally

Actual screen size

21" picture measured diagonally

Antenna

75 ohm external antenna terminal for VHF/UHF

Supplied accessories

Remote Commander RM-Y168 (KV-20FV12/21FV12/21FV12C ONLY)
Remote Commander RM-Y172 (KV-21FM12 ONLY)
Remote Commander RM-Y173 (KV-20FS12/21FE12/21FE12A/21FE12C ONLY)
Size AA (R6) batteries (2)

Optional accessories

Connecting cables: VMC-810S/820S, VMC-720M,
YC-15V/30V, RK74A
U/V mixer EAC-66

Design and specifications are subject to change without notice.

TABLE OF CONTENTS

WARNINGS AND CAUTIONS

CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

WARNING!!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS. THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS, AND IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL FOR SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION!!

APRES AVOIR DECONNECTE LE CAP DE L'ANODE, COURT-CIRCUITER L'ANODE DU TUBE CATHODIQUE ET CELUI DE L'ANODE DU CAP AU CHASSIS METALLIQUE DE L'APPAREIL, OU AU COUCHE DE CARBONE PEINTE SUR LE TUBE CATHODIQUE OU AU BLINDAGE DU TUBE CATHODIQUE.

ATTENTION!!

AFIN D'EVITER TOUT RESQUE D'ELECTROCUTION PROVENANT D'UN CHÁSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE. LE CHÁSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS A LA SECURITE!!

LES COMPOSANTS IDENTIFIES PAR UNE TRAME ET PAR UNE MARQUE ⚠ SUR LES SCHEMAS DE PRINCIPE, LES VUES EXPLOSEES ET LES LISTES DE PIECES SONT D'UNEIMPORTANCE CRITIQUE POUR LA SECURITE DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMERO DE PIECE EST INDIQUE DANS LE PRESENT MANUEL OU DANS DES SUPPLEMENTS PUBLIES PAR SONY. LES REGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SECURITE DU FONCTIONNEMENT SONT IDENTIFIES DANS LE PRESENT MANUEL. SUIVRE CES PROCEDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONTIONNEMENT SUSPECTE.

SELF-DIAGNOSTIC FUNCTION

The units in this manual contain a self-diagnostic function. If an error occurs, the STANDBY/TIMER LED will automatically begin to flash. The number of times the LED flashes translates to a probable source of the problem. A definition of the STANDBY/TIMER LED flash indicators is listed in the instruction manual for the user’s knowledge and reference. If an error symptom cannot be reproduced, the Remote Commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

Diagnostic Test Indicators

When an error occurs, the STANDBY/TIMER LED will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the LED will identify the first of the problem areas.

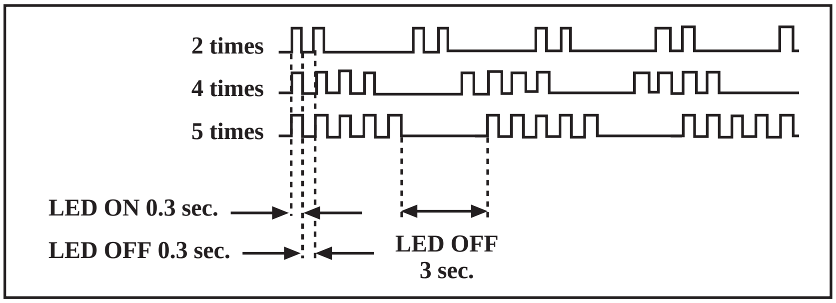
Results for all of the following diagnostic items are displayed on screen. No error has occurred if the screen displays a “0”.

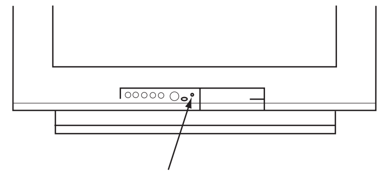
Diagnostic Item Description	No. of Times STANDBY/TIMER LED Flashes	Self-Diagnostic Display/ Diagnostic Result	Probable Cause Location	Detected Symptoms
Power does not turn on	Does not light	——	• Power cord is not plugged in. • Fuse is burned out. (F601) (A Board)	• Power does not come on. • No power is supplied to the TV. • AC power supply is faulty.
+B overcurrent (OCP)*	2 times	2:0 or 2:1	• H.OUT (Q502) is shorted. (A Board) • IC702 is shorted. (CB Board)	• Power does not come on. • Load on power line is shorted.
Vertical deflection stopped*	4 times	4:0 or 4:1	• +12V is not supplied. (A Board) • IC502 is faulty. (A Board)	• Has entered standby state after horizontal raster. • Vertical deflection pulse is stopped. • Power line is shorted or power supply is stopped.
White balance failure (not balanced)	5 times	5:0 or 5:1	• Video OUT (IC502) is faulty. (A Board) • IC1301 is faulty. (MB Board) • Screen (G2) is improperly adjusted.**	• No raster is generated. • CRT cathode current detection reference pulse output is small.

* If a +B overcurrent is detected, stoppage of the vertical deflection is detected simultaneously. The symptom that is diagnosed first by the microcontroller is displayed on the screen.

** Refer to Screen (G2) Adjustments in Section 3-4 of this manual.

Display of Standby/Timer LED Flash Count





Diagnostic Item	Flash Count*
+B overcurrent	2 times
Vertical deflection stopped	4 times
White balance failure	5 times

*One flash count is not used for self-diagnostic.

Stopping the Standby/Timer LED Flash

Turn off the power switch on the TV main unit or unplug the power cord from the outlet to stop the STANDBY/TIMER LAMP from flashing.

Self-Diagnostic Screen Display

For errors with symptoms such as “power sometimes shuts off” or “screen sometimes goes out” that cannot be confirmed, it is possible to bring up past occurrences of failure on the screen for confirmation.

To Bring Up Screen Test

In standby mode, press buttons on the Remote Commander sequentially, in rapid succession, as shown below:

[Display] ➡ Channel [5] ➡ Sound volume [–] ➡ Power ON

⇧ Note that this differs from entering the service mode (sound volume [+]).

Self-Diagnostic Screen Display

SELF DIAGNOSTIC

2:		0
3:	N/A	0
4:		0
5:		1
101:	N/A	0

Numeral “0” means that no fault was detected.

Numeral “1” means a fault was detected one time only.

Handling of Self-Diagnostic Screen Display

Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen during repairs. When you have completed the repairs, clear the result display to “0”.

Unless the result display is cleared to “0”, the self-diagnostic function will not be able to detect subsequent faults after completion of the repairs.

Clearing the Result Display

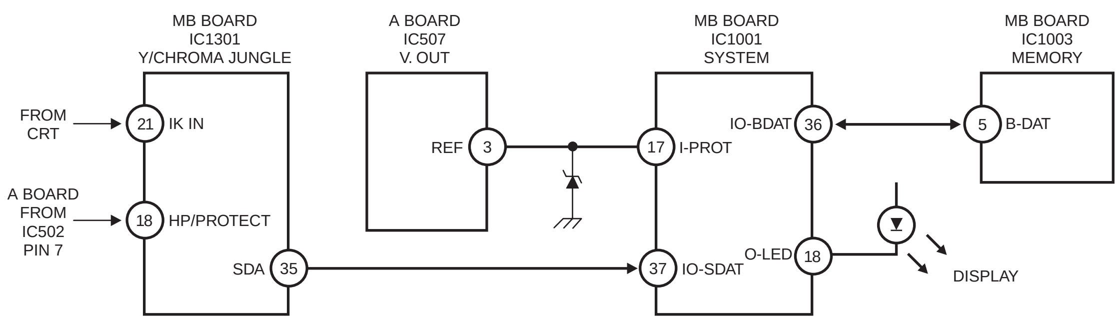
To clear the result display to “0”, press buttons on the Remote Commander sequentially when the diagnostic screen is displayed, as shown below:

Channel [8] ➡ [ENTER]

Quitting the Self-Diagnostic Screen

To quit the entire self-diagnostic screen, turn off the power switch on the Remote Commander or the main unit.

Self-Diagnostic Circuit



+B overcurrent (OCP)

Occurs when an overcurrent on the +B (135V) line is detected by pin 18 of IC1301 (MB Board). If the voltage of pin 18 of IC1301 (MB Board) is less than 1V when V.SYNC is more than seven verticals in a period, the unit will automatically turn off.

Vertical deflection stopped

Occurs when an absence of the vertical deflection pulse is detected by pin 17 of IC1001 (MB Board). Power supply will shut down when waveform interval exceeds 2 seconds.

White balance failure

If the RGB levels* do not balance within 2 seconds after the power is turned on, this error will be detected by IC1301 (MB Board). TV will stay on, but there will be no picture.

*(Refers to the RGB levels of the AKB detection Ref pulse that detects 1K).

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or touching high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the B+ and HV to see if they are specified values. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
8. Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

Leakage Test

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instructions.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low voltage scale. The Simpson’s 250 and Sanwa SH-63TRD are examples of passive VOMs that are suitable. Nearly all battery-operated digital multimeters that have a 2 VAC range are suitable (see Figure A).

How to Find a Good Earth Ground

A cold-water pipe is a guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60- to 100-watt trouble-light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side on the line; the lamp should light at normal brilliance if the screw is at ground potential (see Figure B).

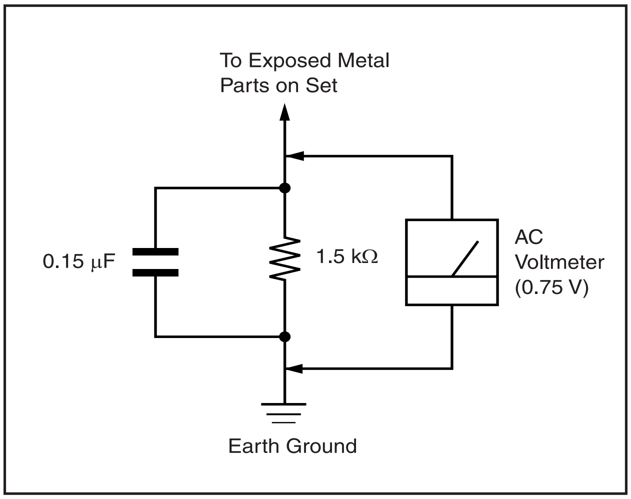


Figure A. Using an AC voltmeter to check AC leakage.

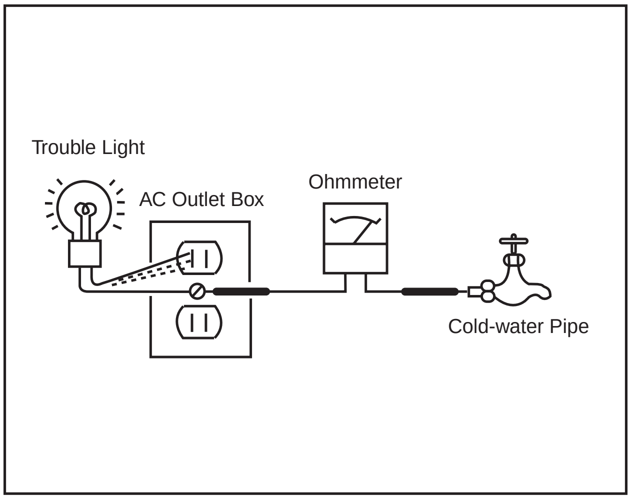


Figure B. Checking for earth ground.

The instructions mentioned here are partial abstracts from the Operating Instruction Manual.
The page numbers shown reflect those of the Operating Instruction Manual.

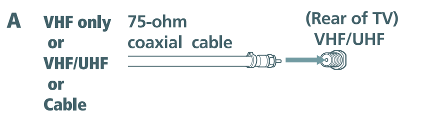
Connecting Your TV

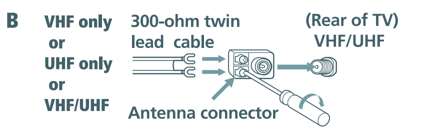
Read this section before setting up your TV for the first time. This section covers basic connections in addition to any optional equipment you may be connecting.

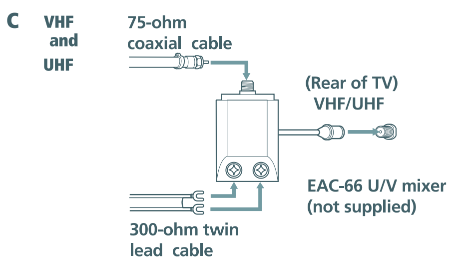
Basic Connections

TV with indoor or outdoor antenna, or CATV cable

Depending on the cable available in your home, choose one of the connections below:



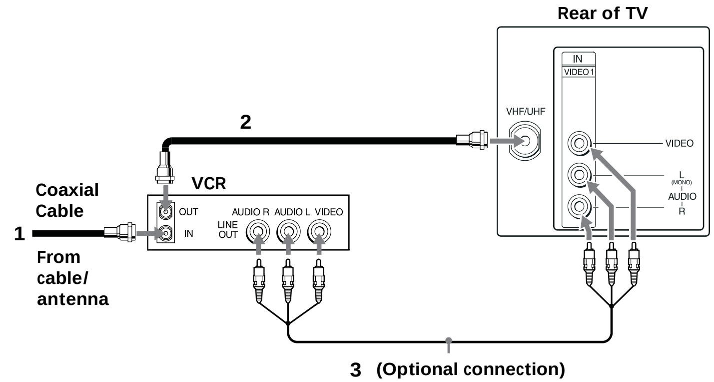




If you are connecting to an indoor or outdoor antenna, you may need to adjust the orientation of the antenna for best reception.

Connecting Additional Equipment

TV and VCR



1 Connect the coaxial cable from your TV antenna or cable service to the IN jack on your VCR.

2 Connect a coaxial cable (not supplied) from the OUT jack on your VCR to the VHF / UHF jack on the TV.

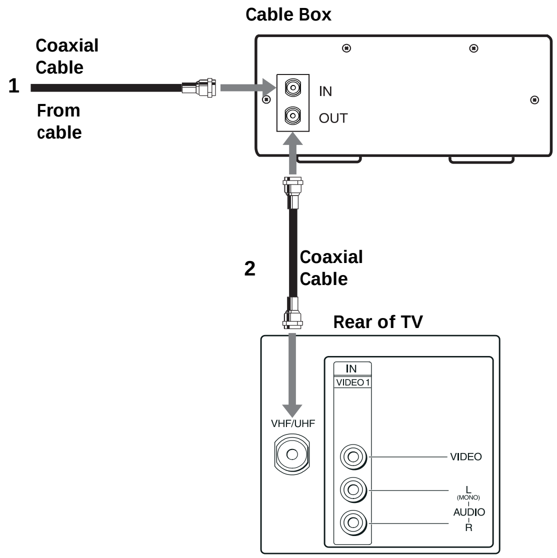
To watch video programs from your VCR, tune your TV to channel 3 or 4 (as set on the rear of your VCR).

(Optional connection)

3 If your VCR is equipped with video outputs, you can get better picture quality by connecting A / V cables (not supplied) from AUDIO and VIDEO OUT on your VCR to AUDIO / VIDEO IN on your TV.

You can use the TV/VIDEO button to switch between the VHF/UHF and VIDEO inputs.

TV and Cable Box



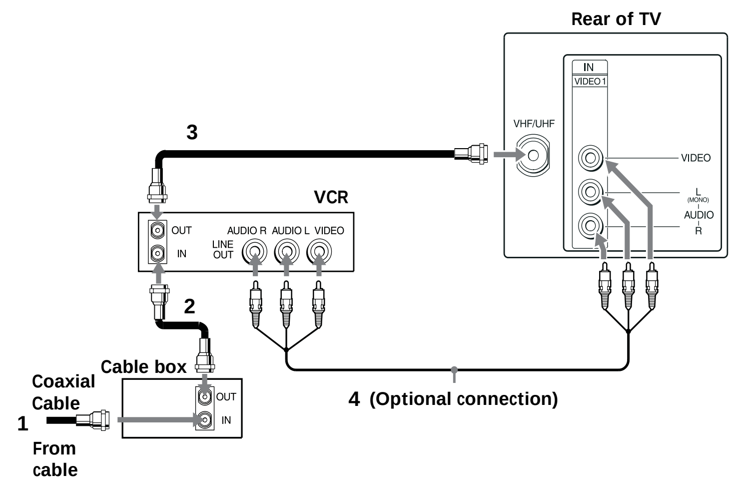
1 Connect the coaxial cable from your cable service to the IN jack on your cable box.

2 Connect a coaxial cable (not supplied) from the OUT jack on your cable box to the VHF / UHF jack on the TV.

> To view channels from your cable box, tune your TV to channel 3 or 4 (as set on the rear panel of your cable box) and use the cable box's remote control to change channels.

> If you will be controlling all channel selection through your cable box, you should consider using the Channel Fix feature, (see page 19).

TV, VCR, and Cable box



1 Connect the coaxial cable from your cable service to the IN jack on your cable box.

2 Connect a coaxial cable (not supplied) from the OUT jack on your cable box to the IN jack on your VCR.

3 Connect a coaxial cable (not supplied) from the OUT jack on your VCR to the VHF / UHF jack on the TV.

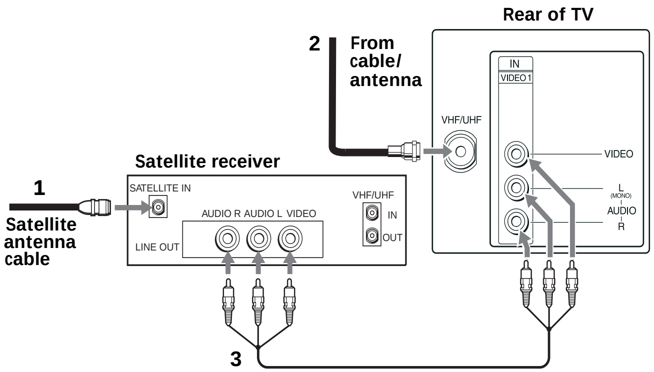
> If you will be controlling all channel selection through your cable box, you should consider using the Channel Fix feature, (see page 19).

(Optional connection)

4 If your VCR is equipped with video outputs, you can get better picture quality by connecting A / V cables (not supplied) from AUDIO and VIDEO OUT on your VCR to AUDIO / VIDEO IN on your TV.

> You can use the TV/VIDEO button to switch between the VHF/UHF and VIDEO inputs.

TV and Satellite Receiver



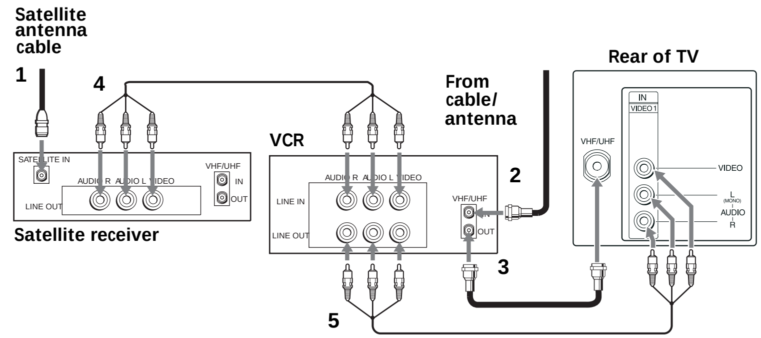
1 Connect the cable from your satellite antenna to SATELLITE IN on your satellite receiver.

2 Connect the coaxial cable from your cable service or antenna to the VHF / UHF jack on your TV.

3 Using A / V cables, connect AUDIO and VIDEO OUT on your satellite receiver to AUDIO and VIDEO IN on your TV.

> You can use the TV/VIDEO button to switch between the VHF/UHF and VIDEO inputs.

TV, Satellite Receiver, and VCR



1 Connect the cable from your satellite antenna to SATELLITE IN on your satellite receiver.

2 Connect the coaxial cable from your cable service or antenna to the IN jack on your VCR.

3 Using a coaxial cable, connect the OUT jack on your VCR to the VHF / UHF jack on your TV.

4 Using A / V cables, connect AUDIO and VIDEO OUT on your satellite receiver to AUDIO and VIDEO IN on your VCR.

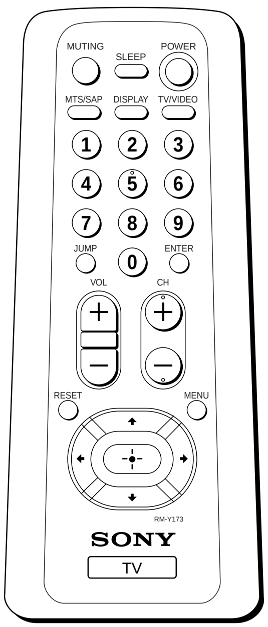
5 Using A / V cables, connect AUDIO and VIDEO OUT on your VCR to AUDIO and VIDEO IN on your TV.

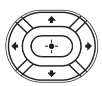
> To view from the satellite receiver or VCR, select the video input to which your VCR is connected by pressing TV/VIDEO on the remote control.

Using the Remote Control and Basic Functions

This section shows you how to use the more advanced buttons on the remote control and how to use the on-screen menus.

Using the Remote Control



Button	Description
POWER	Press when you want to turn the TV on and off.
MUTING	Instantly turns off the sound. Press again or press VOL + to restore sound.
TV/VIDEO	Cycles through available video inputs.
	Moves the cursor in the on-screen menus. Press the arrow buttons to move the cursor. Press the center button to select or access an option.
SLEEP	Turns the TV off automatically in approximately 15, 30, 45, 60, or 90 minutes. Cancel by pressing until SLEEP OFF appears.
MTS/SAP	Cycles through the Multi-channel TV Sound (MTS) options: Stereo, Mono, and Auto-SAP (Second Audio Programming) (KV-21FE12 models only).
DISPLAY	Press to display the current time, (if set) and channel number.
JUMP	Alternates between the last two channels selected with the 0-9 buttons.

The remote control illustrated (RM-Y173) is for KV-21FE12 models. For KV-21FM12 and KV-14FM12 models, your remote control does not have the MTS/SAP button.

(Continued)

MENU	Displays the on-screen menu. Press again to exit the menu at any time.
RESET	Press to return to factory settings while in an on-screen menu.

Other Information

Troubleshooting

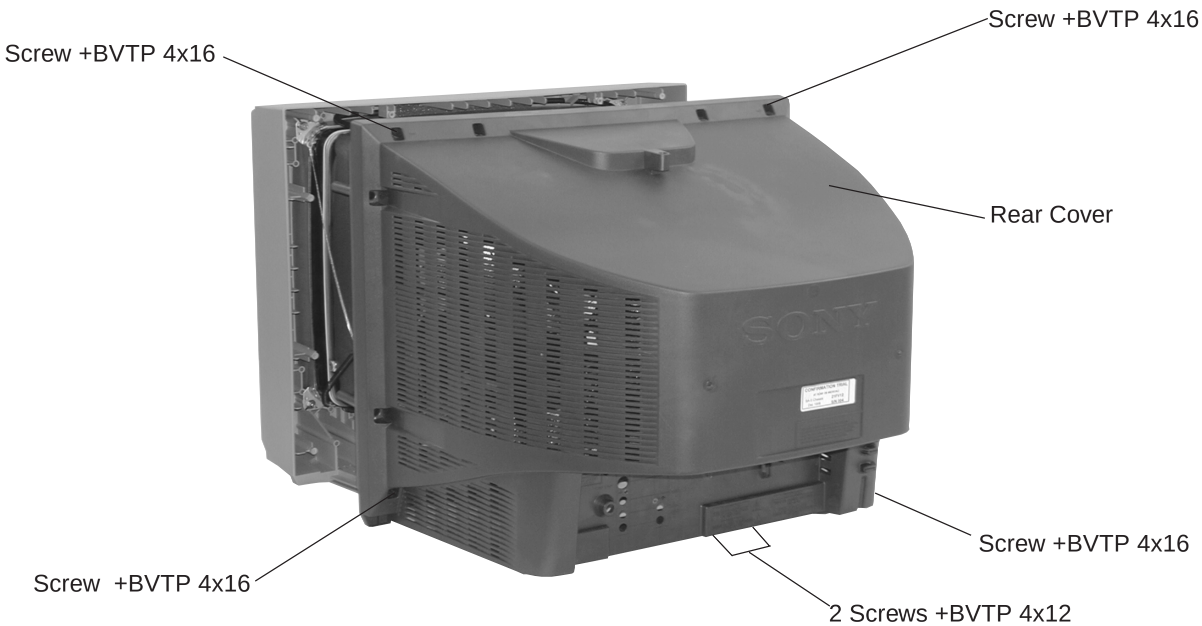
If you are having a problem with your TV, try the suggestions below. If the problem persists, contact your nearest Sony dealer.

No picture, no sound	❑ Make sure the power cord is plugged in. ❑ If a red light is flashing on the front of your TV for more than a few minutes, disconnect and reconnect the power cord to restore the TV. If the problem continues, call your local service center. ❑ Check the TV / VIDEO settings: when watching TV, set to TV; when watching video equipment, set to VIDEO (page 11). ❑ Make sure the batteries have been inserted correctly into the remote control. ❑ Try another channel, it could be station trouble.
Poor or no picture, good sound	❑ Adjust Picture in the Video menu (page 17). ❑ Adjust Brightness in the Video menu (page 17). ❑ Check the antenna and / or cable connections (page 3).
Good picture, no sound	❑ Press MUTING ○ so that MUTING disappears from the screen (page 11). ❑ Check your Audio settings. Your TV may be set to Auto-SAP (page 18).
No color	❑ Adjust Color in the Video menu (page 17).
No signal	❑ Check the Cable setting in the Options menu under Setup (page 23). ❑ Check the antenna and / or cable connections (page 3). ❑ Make sure the channel selected is currently broadcasting.
Dotted lines or stripes	❑ Adjust the antenna. ❑ Move the TV away from other electronic equipment. Some electronic equipment can create electrical noise, which can interfere with TV reception.
Double images or ghosts	❑ Check your outdoor antenna or call your cable service.

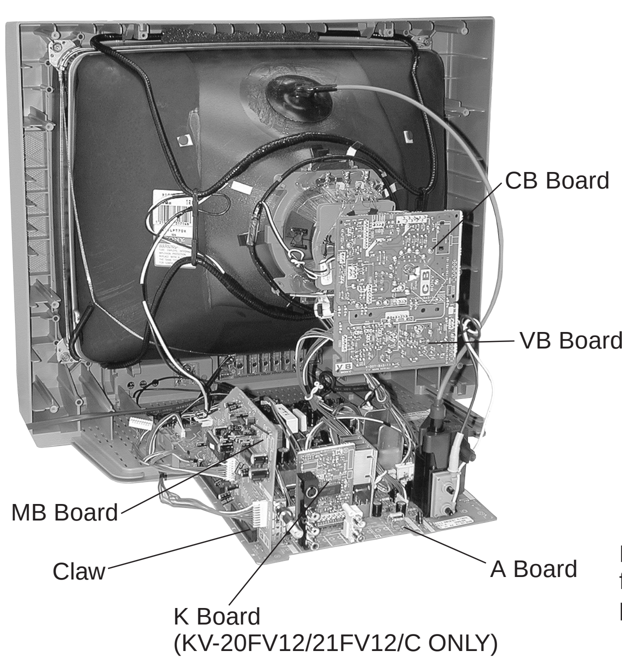
Cannot receive higher number channels (UHF) when using an antenna	❑ Make sure Cable is set to OFF in the Options menu under Setup (page 23). ❑ Perform Auto Program to add channels that are not presently in the memory (page 23).
Cable stations don't seem to work	❑ Make sure Cable is set to ON in the Options menu under Setup (page 23). ❑ Perform Auto Program to add channels that are not presently in the memory (page 23).
Remote control does not operate	❑ Batteries could be weak. Replace them (page 2). ❑ Move the TV 3-4 feet or more away from fluorescent lights.
The TV needs to be cleaned	❑ Clean the TV with a soft dry cloth. Never use strong solvents such as thinner or benzine, which might damage the finish of the cabinet.

SECTION 2
DISASSEMBLY

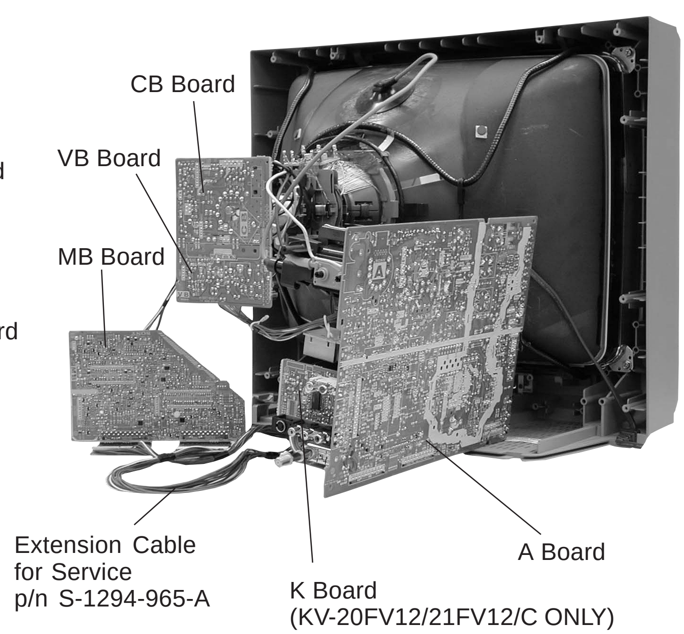
2-1. REAR COVER REMOVAL



2-2. CHASSIS ASSEMBLY REMOVAL



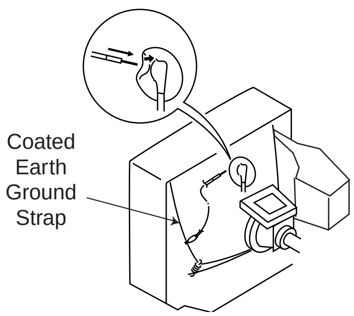
2-3. SERVICE POSITION

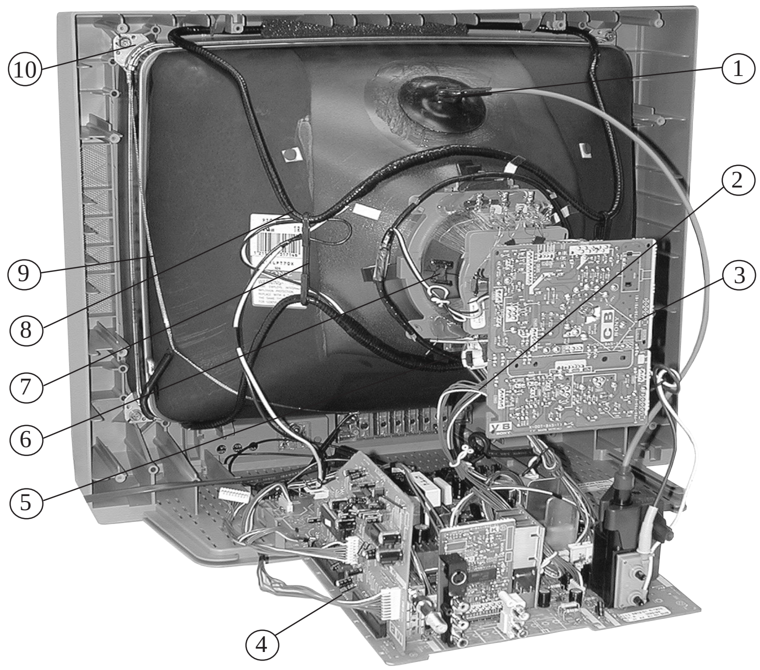


2-4. PICTURE TUBE REMOVAL

WARNING:
BEFORE REMOVING
THE ANODE CAP

High voltage remains in the CRT even after the power is disconnected. To avoid electric shock, discharge CRT ***before*** attempting to remove the anode cap. Short between anode and CRT coated earth ground strap.





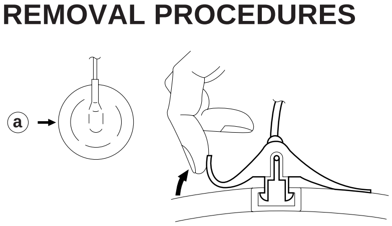
1. Discharge the anode of the CRT and remove the anode cap.
2. Unplug all interconnecting leads from the deflection yoke, neck assembly, degaussing coils and CRT grounding strap.
3. Remove the CB Board from the CRT.
4. Remove the chassis assembly.
5. Loosen the neck assembly fixing screw and remove.
6. Loosen the deflection yoke fixing screw and remove.
7. Place the set with the CRT face down on a cushion and remove the degaussing coil holders.
8. Remove the degaussing coils.
9. Remove the CRT grounding strap and spring tentioners.
10. Unscrew the four CRT fixing screws [located on each CRT corner] and remove the CRT [Take care not to handle the CRT by the neck].

ANODE CAP REMOVAL

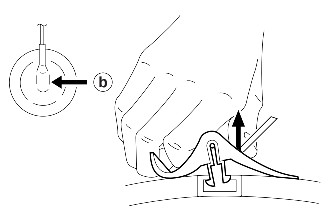
WARNING: High voltage remains in the CRT even after the power is disconnected. To avoid electrical shock, discharge the CRT **before** attempting to remove the anode cap. Short between anode and coated earth ground strap of CRT.

NOTE: After removing the anode, short circuit the anode of the picture tube and the anode cap to either the metal chassis, CRT shield, or carbon painted on the CRT.

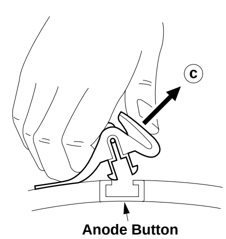
REMOVAL PROCEDURES



① Turn up one side of the rubber cap in the direction indicated by arrow ⓐ.



② Use your thumb to pull the rubber cap firmly in the direction indicated by arrow ⓑ.



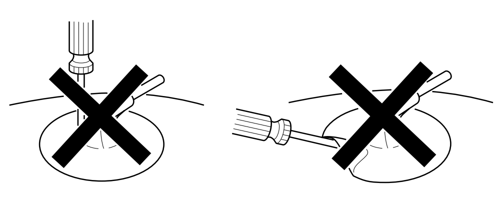
③ When one side of the rubber cap separates from the anode button, the anode cap can be removed by turning the rubber cap and pulling it in the direction of arrow ⓒ.

HOW TO HANDLE AN ANODE CAP

① Do not use sharp objects which may cause damage to the surface of the anode cap.

② To avoid damaging the anode cap, do not squeeze the rubber covering too hard. A material fitting called a shatter-hook terminal is built into the rubber.

③ Do not force turn the foot of the rubber cover. This may cause the shatter-hook terminal to protrude and damage the rubber.



SECTION 3
SET-UP ADJUSTMENTS

The following adjustments should be made when a complete realignment is required or when a new picture tube is installed.

These adjustments should be performed with rated power supply voltage unless otherwise noted.

Set the controls as follows unless otherwise noted:

VIDEO MODE: STANDARD
PICTURE control: .... Normal
BRIGHTNESS control: .... Normal

Perform the adjustments in order as follows:
1. Beam Landing
2. Convergence
3. Focus
4. Screen (G2)
5. White Balance

Note: Test equipment required:
- Color Bar Pattern Generator
- Degausser
- DC Power Supply
- Digital Multimeter

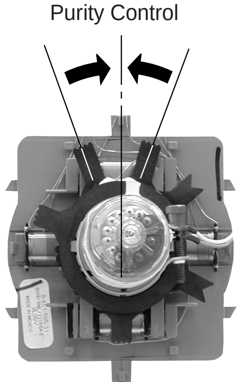
3-1. BEAM LANDING

Before beginning adjustment procedure:

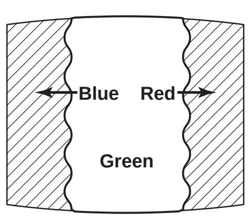
1. Degauss the entire screen.
2. Feed in the white pattern signal.

Adjustment Procedure

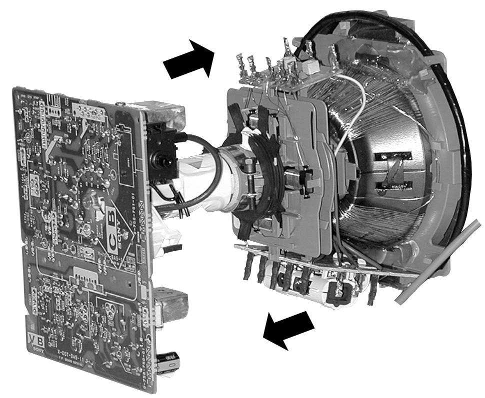
1. Input a raster signal with the pattern generator.
2. Loosen the deflection yoke mounting screw and set the purity control to the center as shown below.



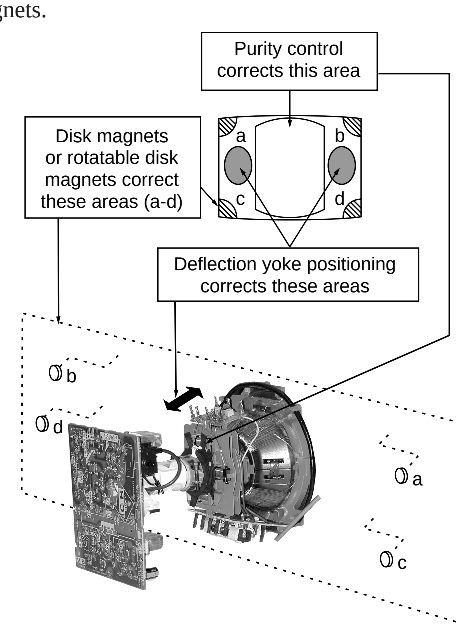
3. Turn the raster signal of the pattern generator to green.
4. Move the deflection yoke backward and adjust the purity control so that green is in the center and red and blue are at the sides evenly.



5. Move the deflection yoke forward and adjust so that the entire screen becomes green.



6. Switch over the raster signal to red and blue and confirm the condition.
7. When the position of the deflection yoke is determined, tighten it with the deflection yoke mounting screw.
8. If landing at the corner is not right, adjust by using the disk magnets.



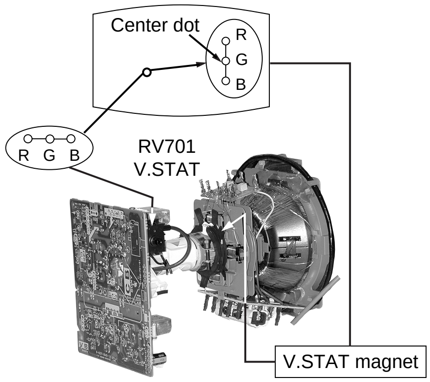
3-2. CONVERGENCE

Before starting convergence adjustments:

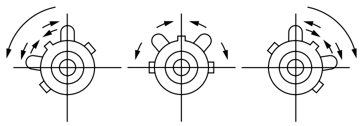
1. Perform FOCUS, V.LIN AND V.SIZE adjustments.
2. Set BRIGHTNESS control to minimum.
3. Feed in dot pattern.

Vertical Static Convergence

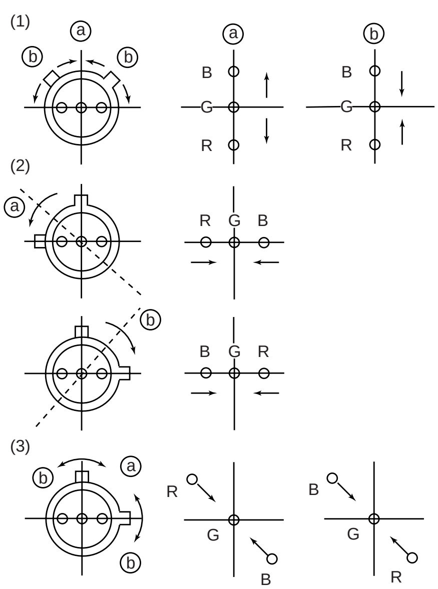
1. Adjust V.STAT magnet to converge red, green and blue dots in the center of the screen (Vertical movement adjust V.STAT RV to converge).



2. Tilt the V.STAT magnet and adjust static convergence to open or close the V.STAT magnet.



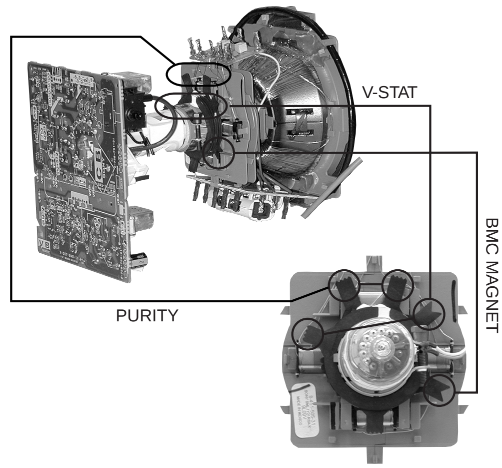
When the V.STAT magnet is moved in the direction of arrows a and b, red, green, and blue dots move as shown below:

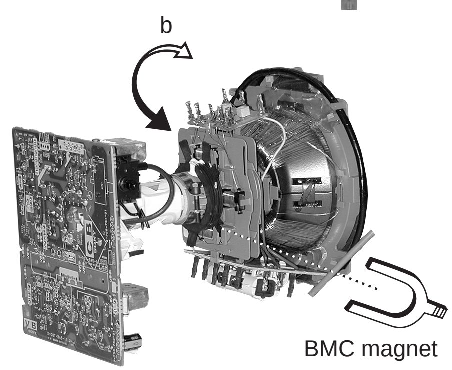


Horizontal Static Convergence

If the blue dot does not converge with the red and green dots, perform the following:

1. Move BMC magnet (a) to correct insufficient H. Static convergence.
2. Rotate BMC magnet (b) to correct insufficient V. Static convergence.
3. After adjusting the BMC magnet, repeat Beam Landing Adjustment.

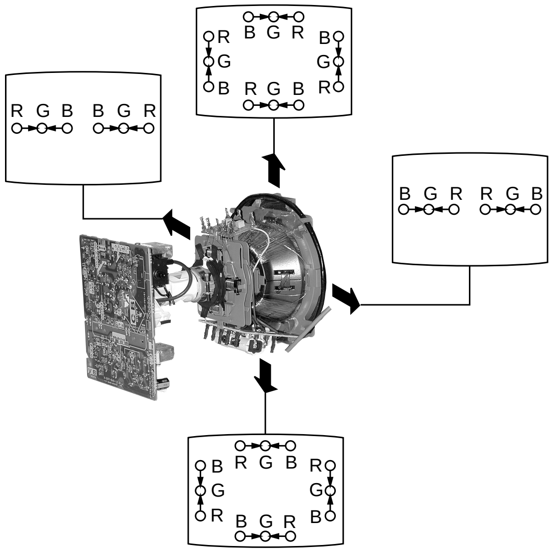




Dynamic Convergence Adjustment

Before performing this adjustment, perform Horizontal and Vertical Static Convergence Adjustment.

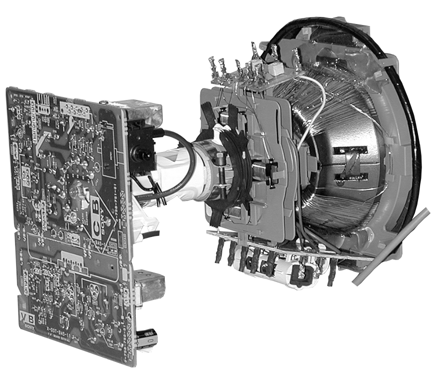
1. Slightly loosen deflection yoke screw.
2. Remove deflection yoke spacers.
3. Move the deflection yoke for best convergence as shown on the following page.

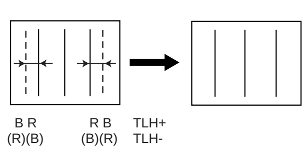


4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.

TLH Plate Adjustment

1. Input crosshatch pattern.
2. Adjust PICTURE QUALITY to standard, PICTURE and BRIGHTNESS to 50%, and OTHER to standard.
3. Adjust the Horizontal Convergence of red and blue dots by tilting the TLH plate on the deflection yoke.





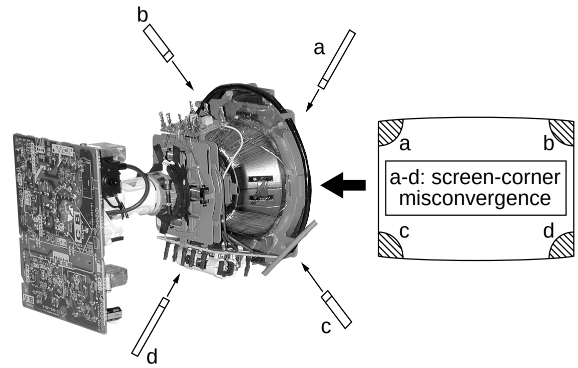
4. Adjust XCV core to balance X axis.
5. Adjust YCH VR to balance Y axis.

6. Adjust vertical red and blue convergence with V.TILT (TLV VR).

   Perform adjustments while tracking items 1 and 2.

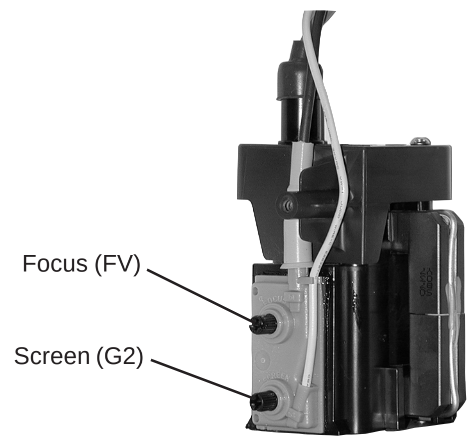
Screen-Corner Convergence

1. Affix a permalloy assembly corresponding to the misconverged areas.



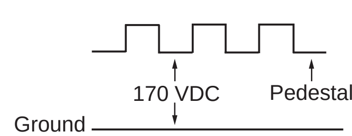
3-3. FOCUS

1. Adjust FOCUS control for best picture.



3-4. SCREEN (G2)

1. Input a dots pattern.
2. Set the PICTURE and BRIGHTNESS controls at minimum and COLOR control at normal.
3. Adjust SBRT, GCUT, BCUT in service mode with an oscilloscope as shown below so that voltages on the red, green, and blue cathodes are 170 VDC.



4. Observe the screen and adjust SCREEN (G2) VR in FBT to obtain the faintly visible background of dot signal.

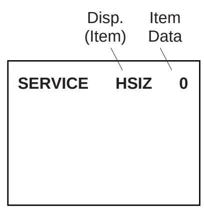
3-5. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

Service Mode Procedure

1. Standby mode (power off).
2. [Display] → Channel [5] → Sound volume [+] → Power on the Remote Commander (press each button within a second).

Service Adjustment Mode In

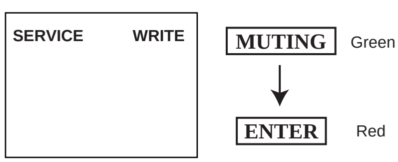
1. The CRT displays the item being adjusted.



2. Press [1] or [4] on the Remote Commander to select the item.
3. Press [3] or [6] on the Remote Commander to change the data.
4. Press [MUTING] then [ENTER] to save into the memory.

Service Adjustment Mode Memory

Turn set off then on to exit service adjustment mode.



3-6. WHITE BALANCE ADJUSTMENTS

1. Input an entire white signal with burst.
2. Set to Service Adjustment Mode.
3. Set DCOL to "0".
4. Set the PICTURE and BRIGHTNESS to minimum.
5. Adjust with SBRT if necessary.
6. Select GCUT and BCUT with [1] and [4] .
7. Adjust with [3] and [6] for the best white balance.
8. Set PICTURE and BRIGHTNESS to maximum.
9. Select GDRV and BDRV with [1] and [4] .
10. Adjust with [3] and [6] for the best white balance.
11. Reset DCOL to "1".
12. To write into memory, press [MUTING] then [ENTER] .

SECTION 4
SAFETY RELATED ADJUSTMENTS

4-1. ⧓ R562 CONFIRMATION METHOD (HV HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

The following adjustments should always be performed when replacing the following components which are marked with ◪ on the schematic diagram:

Part Replaced (◪)	Adjustment (⧓)
DY, T505, CRT, IC1301, IC501, C507, C520, C505, C509, C515, T504, L508, C551, L510, C546, C537, C547, D517, D518, D519, R560, R561, R562, R563, R565, R566, R567, R525 ....A Board	HV HOLD-DOWN R562

Preparation Before Confirmation

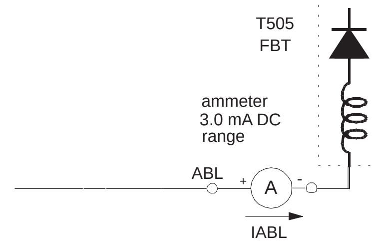
1. Using a Variac, apply AC input voltage: 120-220 ± 2 VAC.
2. Turn the POWER switch ON.
3. Input a white signal and set the PICTURE and BRIGHTNESS controls to maximum.
4. Confirm that the voltage between C546 (+) or TP503 and ground is more than 97 VDC.

Hold-Down Operation Confirmation

1. Connect the current meter between Pin 11 of the FBT (T505) and the PWB land where Pin 11 would normally attach. (See Figure 1 on the next page.)
2. Input a dot signal and set PICTURE and BRIGHTNESS to minimum: IABL = 100 ± 100 µA.
3. Confirm the voltage of A Board TP-600 is 135 ± 1 VDC.
4. Connect the digital voltmeter and the DC power supply via diode 1SS119 to C546 (+) and ground. (See Figure 1 on the next page.)
5. Increase the DC power voltage gradually until the picture blanks out.
6. Turn DC power source off immediately.
7. Read the digital voltmeter indication (standard < 115.7 VDC).
8. Input a white signal and set PICTURE and BRIGHTNESS to maximum: IABL = 1350 ± 100 µA.
9. Repeat steps 4 to 7.

Hold-Down Readjustment

If the setting indicated in step 2 of Hold-Down Operation Confirmation cannot be met, readjustment should be performed by altering the resistance value of R562 component marked with ⧓ .



4-2. B+ VOLTAGE CONFIRMATION AND ADJUSTMENT

Note: The following adjustments should always be performed when replacing the following components, which are marked with ◪ on the schematic diagram on the A Board.

A BOARD:	IC601, PH601

1. Using a Variac, apply AC input voltage: 130 ± 2 VAC.
2. Input a dot signal.
3. Set the PICTURE and BRIGHTNESS controls to minimum.
4. Confirm that the voltage of A Board TP-600 is <136 VDC.
5. If step 3 is not satisfied, replace the components listed above, then repeat steps 1–3.

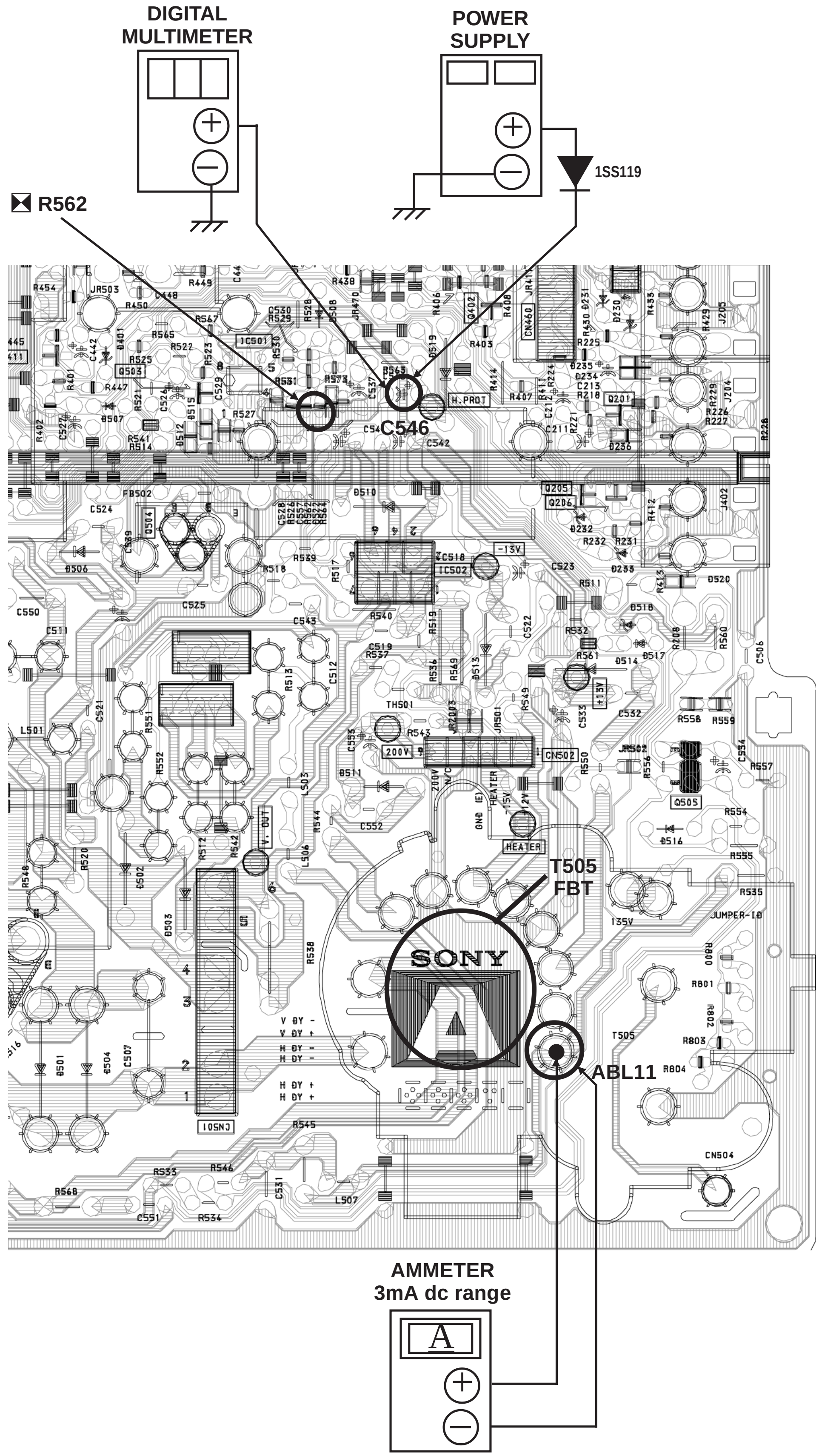

DIGITAL
MULTIMETER
POWER
SUPPLY
1SS119
R562
C546
T505
FBT
SONY
ABL11
AMMETER
3mA dc range
A

Figure 1

SECTION 5
CIRCUIT ADJUSTMENTS

ELECTRICAL ADJUSTMENTS BY REMOTE COMMANDER

Use the Remote Commander (RM-Y168, RM-Y172 or RM-Y173) to perform the circuit adjustments in this section.

NOTE: Test Equipment Required:

- Pattern generator
- Frequency counter
- Digital multimeter
- Audio oscillator

5-1. SETTING THE SERVICE ADJUSTMENT MODE

1. Standby mode (power off).
2. [Display] ➡ Channel [5] ➡ Sound volume [+] ➡ Power on the Remote Commander (press each button within a second).

Service Adjustment Mode On

1. The CRT displays the item being adjusted.

Disp. (Item) — Item Data

SERVICE HSIZ 0

2. Press [1] or [4] on the Remote Commander to select an item.
3. Press [3] or [6] on the Remote Commander to change the data.
4. Press [MUTING] then [ENTER] to save into the memory.

Service Adjustment Mode Memory

SERVICE WRITE

[MUTING] Green
↓
[ENTER] Red

1. Press [8] then [ENTER] on the Remote Commander to initialize.

SERVICE RESET

Carry out step 1 when adjusting IDs 0–4 and when replacing and adjusting IC1003.

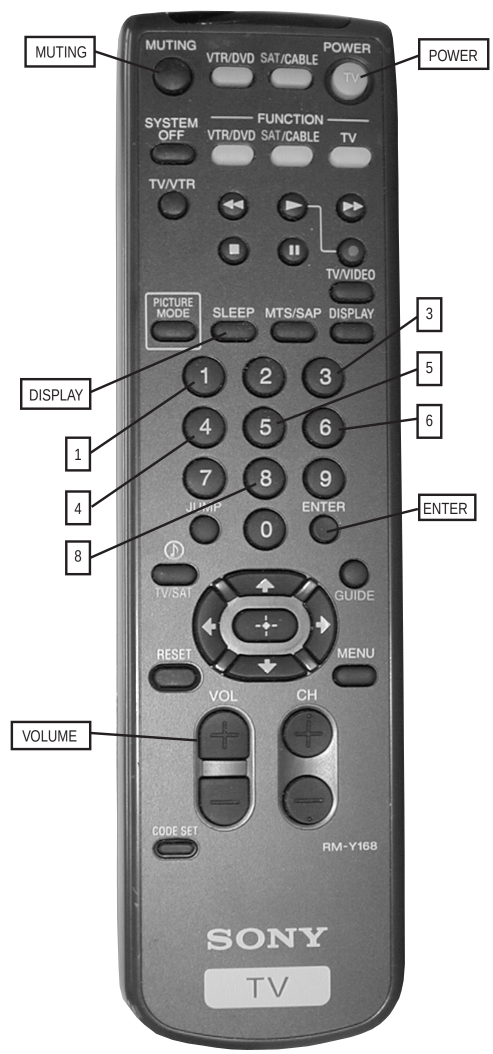
2. Turn set off then on to exit service adjustment mode.

5-2. MEMORY WRITE CONFIRMATION METHOD

1. After adjustment, remove the power plug from the AC outlet, then plug it in again.
2. Turn the power switch ON and set to service mode.
3. Call the adjusted items again to confirm they were adjusted.

5-3. ADJUSTMENT BUTTONS AND INDICATORS

(Use remote commander RM-Y168, RM-Y172 or RM-Y173.)



RM-Y168

Adjustment Items

Reg #	ITEM	FUNCTION	RANGE	FIX DATA	NTSC	PAL M	PAL N	VIDEO	RF	AVERAGE DATA
1	HSIZ	Horizontal Size Adjustment	0-63		35	35	35			40
2	HPOS	Horizontal Position Adjustment	0-63		33	33	33			25
3	VBOW	Vertical Line Bowing Adj.	0-15		5	5	5			7
4	VANG	Vertical line Bowing Slant Adj.	0-15		7	7	7			9
5	TRAP	Horizontal Trapezoid Adj.	0-15		7	7	7			7
6	PAMP	Horizontal PIN Distortion Adj.	0-63		7	7	7			12
7	UPIN	Upper PIN Distortion Adj.	0-63		36	36	36			34
8	LPIN	Lower PIN Distortion Adj.	0-63		36	36	36			37
9	VM	Velocity Modulation On/Off	0,1	Palette mode controls this register						0
10	BLKO	Vertical Blanking On/Off	0,1	0						0
11	VMLV	Velocity Modulation Level	0-3	Palette mode controls this register						2
12	AGN2	Aging 2	0,1	0						0
13	REFP	Reference Pulse Position	0,1	0						0
14	VBLK	Vertical Blanking On/Off	0,3	0						0
15	JPSW		0,1	0						0
16	VSIZ	Vertical Size Adjustment	0-63		40	47	47			26
17	VPOS	Vertical Position Adj.	0-63		32	32	32			35
18	VLIN	Vertical Linearity Adj.	0-15	7						5
19	SCOR	Vertical "S" Correction Adjustment	0-15	6						4
20	VZOM	16:9 CRT Z Mode On/Off	0,1	0						0
21	EHT	Vertical High-Voltage Correction	0-15	15						15
22	ASP	Aspect Ratio Control	0-63	47						47
23	SCRL	16:9 CRT Z Mode Trans. Scroll	0-63	31						31
24	HBLK	Horizontal Blanking On/Off	0,1	1						1
25	LBLK	Left Blanking Adjustment	0-15	11						11
26	RBLK	Right Blanking Adjustment	0-15	8						8
27	VUSN	V Saw Waveform Compress	0,1	0						0
28	HDW	Horizontal Drive Pulse Width	0,1	1						1
29	EWDC	"Parabola" EW/ D.C. Adjustment	0.1	0						0
30	LVLN	Lower Screen BTM Vertical Line Adj.	0-15	0						0
31	UVLN	Upper Screen BTM Vertical Line Adj.	0-15	0						0
32	HTRAP	Horizontal Trapezoid Adj.	0,1	****						0
33	RDRV	R Output Drive Control	0-63	31						21
34	GDRV	G Output Drive Control	0-63	21						14
35	BDRV	B Output Drive Control	0-63	21						14
36	RCUT	R Output Cutoff Control	0-15	10						10
37	GCUT	G Output Cutoff Control	0-15	6						7
38	BCUT	B Output Cutoff Control	0-15	6						7
39	DCOL	Dynamic Color On/Off	0,1	0						1
40	SHUE	Sub HUE	0-31	12						14
41	SCOL	Sub Color	0-31		14	14	14			14
42	SBRT	Sub BRIGHTNESS	0-31	13						13
43	RON	R Output On/Off	0,1	1						1
44	GON	G Output On/Off	0,1	1						1
45	BON	B Output On/Off	0,1	1						1
46	AXPL	Axis PAL	0,1	0						0
47	AXNT	Axis NTSC	0,1	0						1
48	CBPF	Chroma BPF On/Off	0,1	1						1
49	CTRP	Y TRAP FILTER On/Off	0,1	1						1
50	COFF	Color On/Off	0,1	0						0
51	KOFF	Set Color Killer	0,1	0						0
52	SSHP	Sub SHARPNESS	0-15	5						5
53	SHPF	SHARPNESS Circuit Fo	0,1	Palette mode controls this register						1
54	PREL	Pre-Shoot / Over-Shoot	0,1	1						1
55	Y-DC	DC Transmission Ratio Switching	0,1	Palette mode controls this register						1
56	GAMM	Gamma Correction Amnt	0-3	Palette mode controls this register						1
57	ABLM	ABL Mode Switching	0,1	1						1
58	VTH	ABL CD VHT Switching	0,1	1						1
59	YDEL	Y Delay Time Control	0-15	7						7
60	NCOL	No Color ID	0,1	1						1
61	FSC	FSC Out On/Off	0,1	1						1
62	K-ID	Killer ID Control On/Off	0,1	0						0
63	HOSC	Horizontal VCO Oscillation Freq.	0-15	12						12

Reg #	ITEM	FUNCTION	RANGE	FIX DATA	NTSC	PAL M	PAL N	VIDEO	RF	AVERAGE DATA
64	VSS	Vertical Sync Slice Level	0,1	**						0
65	HSS	Horizontal Sync Slice Level	0,1	0						0
66	HMSK		0,1	0						0
67	VTMS	Select Signal VTIM Pin	0-3	0						0
68	CDMD	Vertical Count Down Mode Switching	0-3					3	***	
69	AFC	AFC Loop Gain Switching	0-3	0				0	0	0
70	FIFR	Field Frequency	0-3	*						3
71	SBAL	Sub Balance	0-15	5						7
72	SBAS	Sub Bass	0-7	0						9
73	STRE	Sub Treble	0-7	3						9
74	BBEH	BBE High	0-15	*****						
75	BBEL	BBE Low	0-15	5						12
76	SRND	Surround	0,1	0						13
77	AUX	SRS, Simulated	0-3	0						
78	DISP	O.S.D Display Position	0-130	15						15
79	TROT	Tilt Correction	0-63	31	31					31
80	HCLW	Horizontal Count Lower Limit	0-255	16				16		16
81	HCHG	Horizontal Count High Limit	0-255	64				64		64
82	SYSC	Color System	0-7	4						6
83	VENH	Vertical Enhancement	0-7	Palette mode controls this register						4
84	PDSO		0,1	0						
85	CK		0,1	0						
86	VNL		0-15	3						3
87	HPK		0,1	0						0
88	HPKO		0,1	Palette mode controls this register						
89	CORE		0-3	1						1
90	TRAP		0,1	1						1
91	CHTR		0,1	0						0
92	CHPF		0,1	1						1
93	ENHO		0,1	0						0
94	ID0		0-225	25						SEE ID MAP
95	ID1		0-225	3						SEE ID MAP
96	ID2		0-225	91						SEE ID MAP
97	ID3		0-225	2						SEE ID MAP
98	ID4		0-225	233						SEE ID MAP
99	ID5		0-225	17						SEE ID MAP
100	ID6		0-225	0						SEE ID MAP

* FIFR = 3 for NTSC models, FIFR=1 for Trinorma models

** VSS = 1 for US & CND, VSS=0 for Other

*** CDMD = 3 for US & CND, CDMD = 0 for Other

**** KV-21FE12A,KV-21FE12C,KV-21FV12C=1; Others = 0

***** BBE HIGH FIX DATA: KV-21FV12/21FV12C= 8; Others = 4

SERVICE ID0 25

Notes:

No. 1–100 show the order that each adjustment mode may be selected while in service mode.

Data Range shows the range of possible settings for each adjustment mode.

Initial Data shows the standard settings for each adjustment mode.

ID MAP

MODEL	Destination	ID-0	ID-1	ID-2	ID-3	ID-4	ID-5	ID-6
KV-21FM12	(MX)	17	3	88	2	233	17	0
KV-20FS12	(US)	89	3	75	50	137	17	0
KV-20FS12	(CND)	89	3	75	50	137	17	0
KV-21FE12	(E)	17	3	91	2	233	17	0
KV-21FE12A	(E)	23	3	91	2	233	17	128
KV-21FE12C	(E)	17	3	91	2	233	17	0
KV-20FV12	(US)	89	19	207	50	137	19	0
KV-20FV12	(CND)	89	19	207	50	137	19	0
KV-21FV12	(E)	17	19	223	2	233	19	0
KV-21FV12C	(E)	17	19	223	2	233	19	0

5-4. MB BOARD ADJUSTMENTS

H. Frequency (Free Run) Check

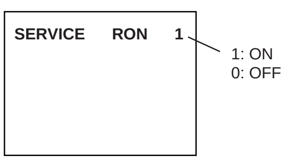
1. Input a TV mode (RF) with no signal.
2. Connect a frequency counter to base of Q501 (TP-500 H. DRIVE).
3. Check H. Frequency for 15735 ± 200 Hz, and 15650 ± 200 Hz for PAL-N (KV-21FE12A ONLY.)

V. Frequency (Free Run) Check

1. Select video 1 with no signal input.
2. Set the conditions for a standard setting.
3. Connect the frequency counter on the A Board to TP-508 (V OUT) or CN 501 pin ⑥ (V DY+) and ground.
4. Check that V. Frequency shows 60 ± 4 Hz for NTSC, 50 ± 4 Hz for PAL-N (KV-21FE12A ONLY).

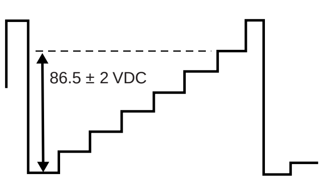
Drive (RDRV) Adjustments

1. Input a color-bar signal and set the level to 75%.
2. In Standard mode, set PICTURE to maximum and COLOR to minimum.
3. Activate the Service Adjustment Mode.
4. Set both GON and BON items. Using [3] and [6]; set each to the following values. Leave RON set to “1”.



R ON:	ON	(1)
G ON:	OFF	(0)
B ON:	OFF	(0)

5. Select the DCOL item and set it to “0”.
6. Connect an oscilloscope probe to C board, J701 pin 12 (KR) (RED OUT).
7. Select RDRV with [1] and [4] .
8. Adjust the value of RDRV with [3] and [6] for 86.5 ± 2 VDC.



9. Reset the item DCOL to “1”.
10. Reset GON and BON values to “1”.

R ON:	ON	(1)
G ON:	ON	(1)
B ON:	ON	(1)

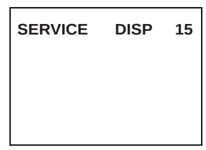
11. Reset Picture and Color to normal values:

    PICTURE: MAX
    COLOR: CENTER

12. Press [MUTING] then [ENTER] to save into the memory.

Display Position Adjustment (DISP)

1. Input a color-bar signal.
2. Set to Service Adjustment Mode.
3. Select DISP with [1] and [4] .
4. Adjust values of DISP with [3] and [6] to adjust characters to the center.
5. Write to memory by pressing [MUTING] then [ENTER] .
6. Check to see if the text is displayed on the screen.

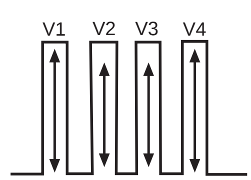


Sub Bright Adjustment (SBRT)

1. Input a monoscope signal.
2. Activate the Service Adjustment Mode.
3. Set the PICTURE and BRIGHTNESS to minimum.
4. Select the SBRT item with [1] and [4] .
5. Adjust the values of SBRT with [3] and [6] to obtain a faintly visible crosshatch.
6. Press [MUTING] then [ENTER] to save into the memory.

Sub Hue, Sub Color Adjustment (SHUE, SCOL)

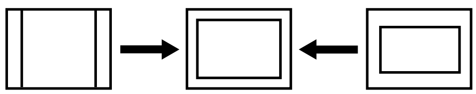
1. Input a color-bar signal and set level to 75%.
2. Activate the Service Adjustment Mode.
3. Select the DCOL item and set the value to “0”.
4. Connect an oscilloscope probe to C Board, CN1752 Pin ④.
5. Select the SHUE and SCOL item with [1] and [4] .
6. While showing the SHUE item, adjust the waveform with [3] and [6] until the second and third bars show the same level (V2 = V3 ± 0.2 Vp-p).
7. While showing the SCOL item, adjust the waveform with [3] and [6] until the first and fourth bars show the same level (V1 = V4 ± 0.2 Vp-p).
8. Input RF PAL-M and PAL-N color-bar and repeat steps 1-7 for each. (KV-21FC12A ONLY).



9. Select the DCOL item and reset to 1.
10. Press MUTING then ENTER to save into the memory.

V. Size Adjustment (VSIZ)

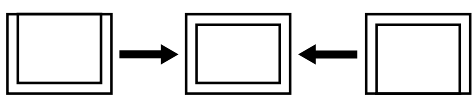
1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select the VSIZ item with 1 and 4 .
4. Adjust value of VPOS with 3 and 6 for the best vertical center.
5. Press MUTING then ENTER to save into the memory.



V. Center Adjustment (VPOS)

Perform this adjustment after performing H. Frequency (Free Run) Check.

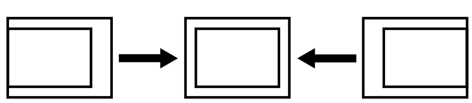
1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select the VPOS item with 1 and 4 .
4. Adjust value of VPOS with 3 and 6 for the best vertical center.
5. Press MUTING then ENTER to save into the memory.



H. Center Adjustment (HPOS)

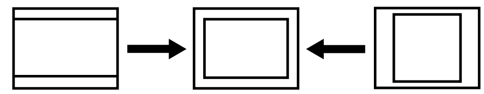
Perform this adjustment after performing H. Frequency (Free Run) Check.

1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select the HPOS item with 1 and 4 .
4. Adjust the value of HPOS with 3 and 6 for the best horizontal center.5. Press MUTING then ENTER to save into the memory.



H. Size Adjustment (HSIZ)

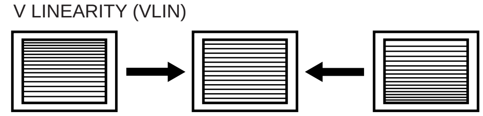
1. Input a monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select HSIZ with 1 and 4 .
4. Adjust with 3 and 6 for the best horizontal size.
5. Press MUTING then ENTER to save into the memory.



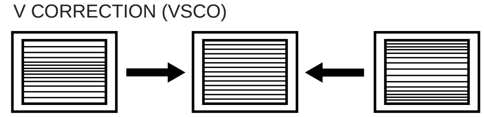
V. Linearity (VLIN), V. Correction (VSCO), Pin Amp (PAMP), and Horizontal Trapezoid (TRAP) Adjustments

1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select VLIN, VSCO, PAMP, and PPHA with with 1 and 4.
4. Adjust with 3 and 6 for the best horizontal size.
5. Press MUTING then ENTER to save into the memory.

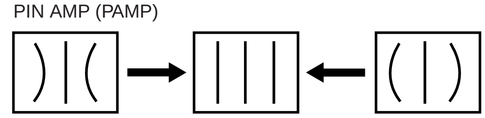
V LINEARITY (VLIN)



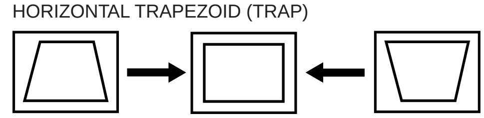
V CORRECTION (VSCO)



PIN AMP (PAMP)

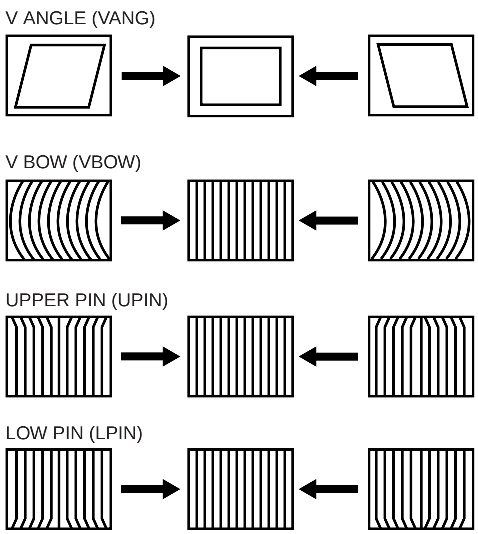


HORIZONTAL TRAPEZOID (TRAP)



V. Angle (VANG), V. Bow (VBOW), Upper pin (UPIN) and Low Pin (LPIN) Adjustments

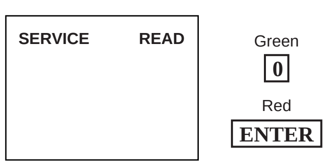
1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select VANG, VBOW, UPIN, and LPIN with [1] and [4].
4. Adjust with [3] and [6] for the best picture.
5. Press [MUTING] then [ENTER] to save into the memory.



Service Adjustment Mode Memory

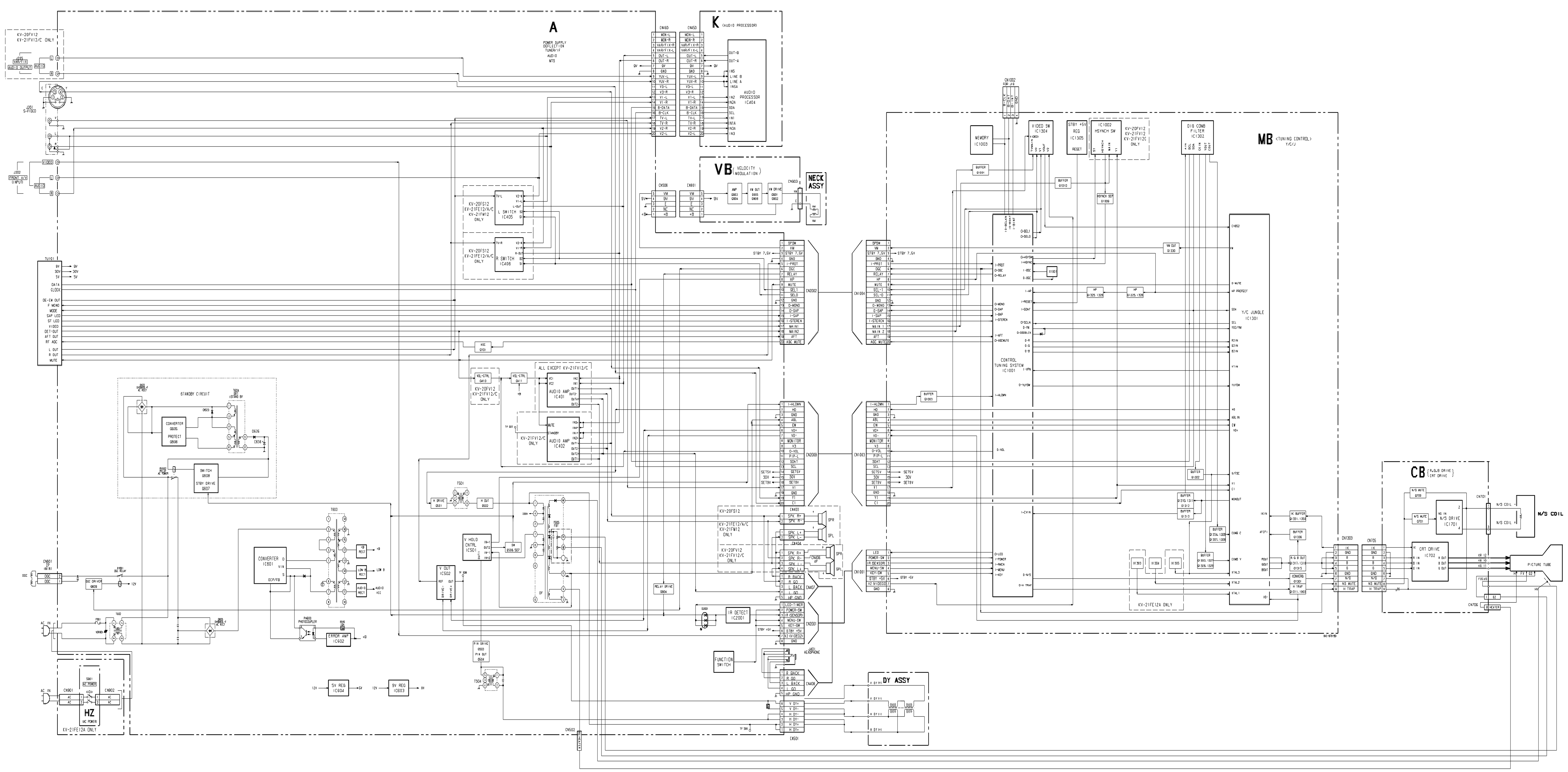
1. Change the value of the DCOL item to “1”.
2. After completing all adjustments, press [0] then [ENTER] .

Read From Memory

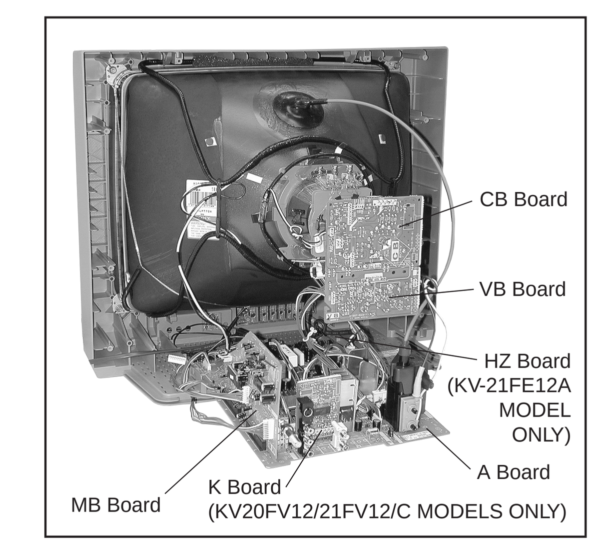


SECTION 6
DIAGRAMS

6.1 BLOCK DIAGRAM



6.2 CIRCUIT BOARD LOCATIONS



6-3. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytic and tantalums.
- All electrolytics are 50V unless otherwise specified.
- Indication of resistance, which does not have one for rating electrical power, is as follows:

  Pitch: 5mm

  Rating electrical power 1/4W (CHIP: 1/10W)
- All resistors are in ohms.

  KΩ = 1000Ω   MΩ = 1000KΩ
- (symbol) : nonflammable resistor
- (symbol) : fusible resistor
- △ : internal component
- ▭ : panel designation and adjustment for repair
- ⊥ : earth-ground
- (symbol) : earth-chassis
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by ⧓ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪, make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⧓ and repeat the adjustment until the specified value is achieved (refer to Safety Related Adjustments on page 19).
- When replacing parts shown in the table below, be sure to perform the related adjustments.

Part Replaced (◪)	Adjustment (⧓)
DY, T505, CRT, IC1301, IC501, C507, C520, C505, C509, C515, T504, L508, C551, L510, C546, C537, C547, D517, D518, D519, R560, R561, R562, R563, R565, R566, R567, R525.......................A Board	HV HOLD-DOWN (R562)

IC601, PH601..................A Board	B+ VOLTAGE CONFIRMATION

- All voltages are in Volts

- Voltage is DC with respect to ground unless otherwise noted.
- Readings are taken with a 10MΩ digital multimeter.
- Readings are taken with a color-bar signal input.
- Voltage variations may be noted due to normal production tolerance.
- Circled numbers are waveform references.
- * : cannot be measured
- ▬▬ : B + Line
- - - - - : B – Line
- ⇨ : Signal path

Reference Information

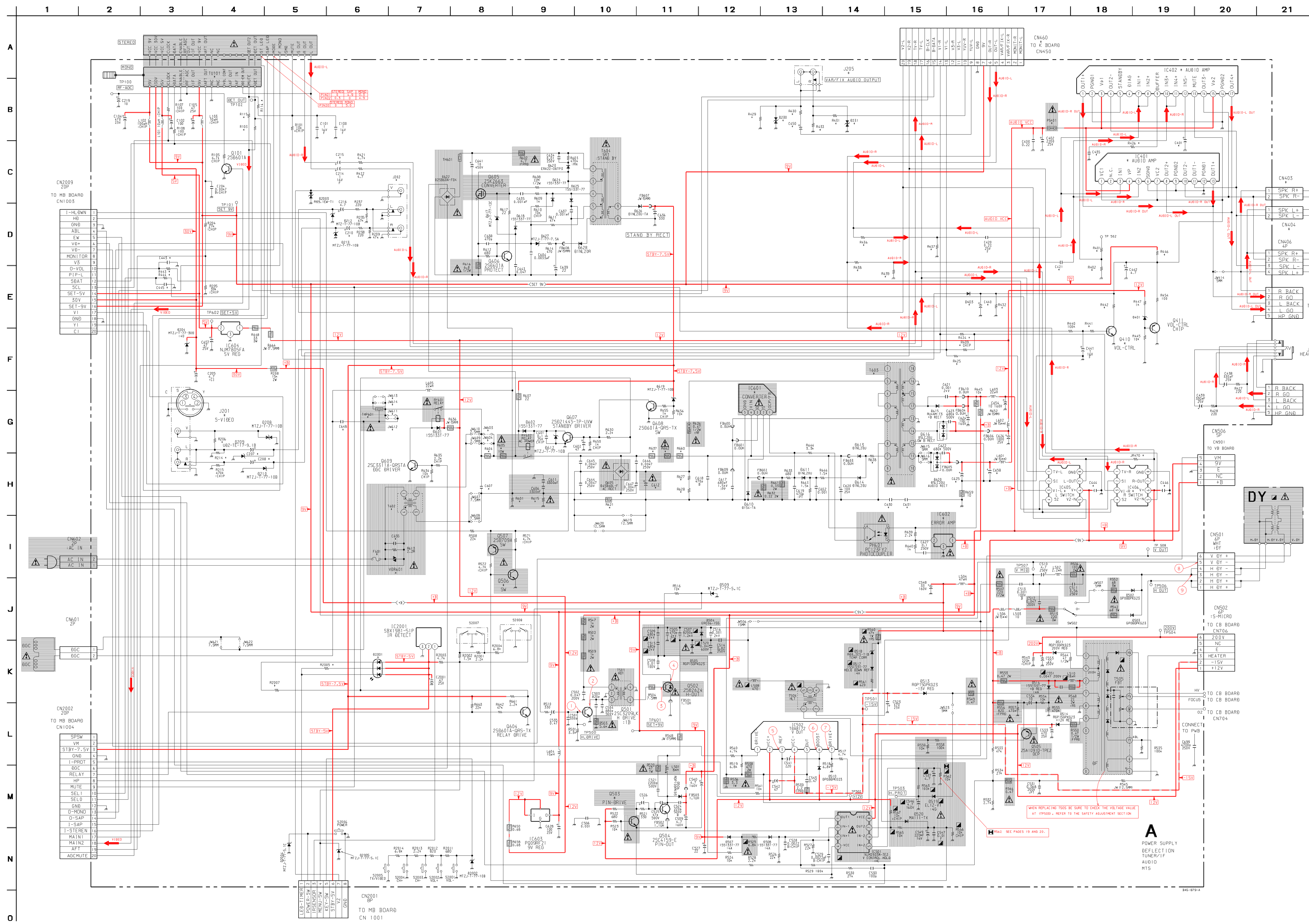
RESISTOR	:	RN	METAL FILM
	:	RC	SOLID
	:	FPRD	NON FLAMMABLE CARBON
	:	FUSE	NON FLAMMABLE FUSIBLE
	:	RW	NON FLAMMABLE WIREWOUND
	:	RS	NON FLAMMABLE METAL OXIDE
	:	RB	NON FLAMMABLE CEMENT
	:	※	ADJUSTMENT RESISTOR
COIL	:	LF-8L	MICRO INDUCTOR
CAPACITOR	:	TA	TANTALUM
	:	PS	STYROL
	:	PP	POLYPROPYLENE
	:	PT	MYLAR
	:	MPS	METALIZED POLYESTER
	:	MPP	METALIZED POLYPROPYLENE
	:	ALB	BIPOLAR
	:	ALT	HIGH TEMPERATURE
	:	ALR	HIGH RIPPLE

Note:

**The components identified by shading and ⚠ mark are critical for safety. Replace only with the part number specified.
The symbol (fuse symbol) (displayed on component side of the circuit board) indicates fast operating fuse. Replace only with fuse of the same rating as marked.**

Les composants identifiés per un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié. Le symbole (fuse symbol) indique une fusible a action rapide. Doit etre remplacee par une fusible de meme yaleur, comme marque.

A BOARD SCHEMATIC DIAGRAM



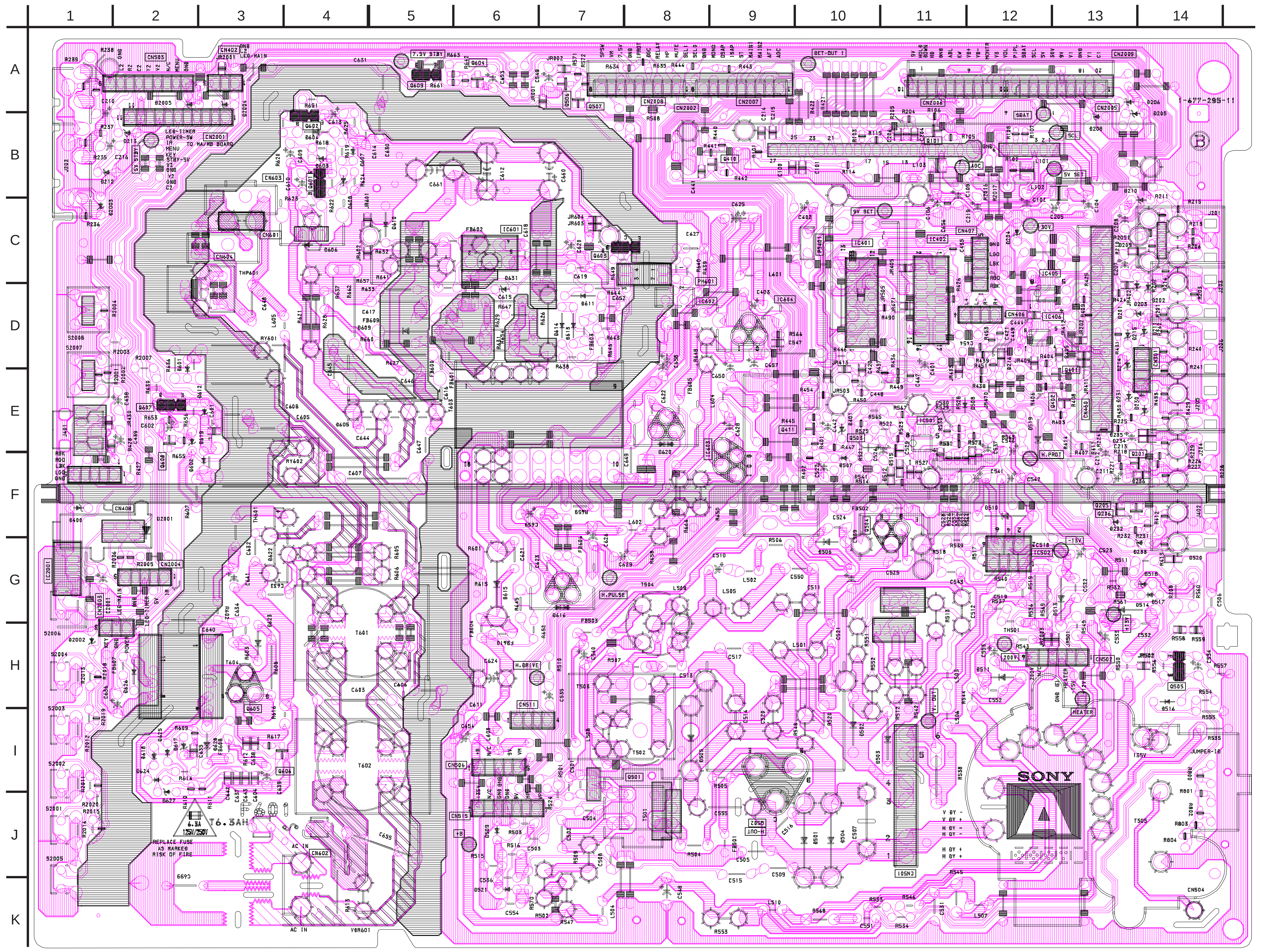
A Board →

A BOARD MARK (*) LIST

REF NO.	LOC.	KV-20FS12	KV-21FE12 KV-21FE12C	KV-21FM12	KV-20FV12	KV-21FE12A	KV-21FV12 KV-21FV12C
C207	G-4	4.7μF	#	4.7μF	JW 5.0 MM	4.7μF	JW 5.0 MM
C208	G-4	4.7μF	4.7μF	4.7μF	JW 5.0 MM	4.7μF	JW 5.0 MM
C210	D-6	4.7μF	4.7μF	#	4.7μF	4.7μF	4.7μF
C215	C-6	1μF 16V	1μF 16V	#	1μF 16V	1μF 16V	1μF 16V
C401	C-19	#	#	#	#	#	100μF
C421	D-17	0.22μF 25V	0.22μF 25V	#	0.22μF 25V	0.22μF 25V	0.22μF 25V
C435	C-18	#	#	#	#	#	0.22μF 25V
C440	E-16	4.7μF	4.7μF	4.7μF	#	4.7μF	#
C443	D-3	0.001μF	0.001μF	0.001μF	#	0.001μF	#
C444	H-18	0.01μF	0.01μF	0.01μF	#	0.01μF	#
C445	E-3	0.001μF	0.001μF	0.001μF	#	0.001μF	#
C446	H-19	0.01μF	0.01μF	#	#	0.01μF	#
C450	B-13	#	#	#	0.47μF 16V	#	.47μF 16V
C607	H-8	0.47μF 125V	0.47μF 300V	0.47μF 300V	0.47μF 125V	0.47μF 300V	0.47μF 300V
C612	H-11	470μF 250V	330μF 400V	330μF 400 V	470μF 250 V	330μF 400V	330μF 400V
C625	H-16	15000μF 25V	1000μF 25V	1000μF 25V	1000μF 25V	1000μF 25V	1000μF 25V
C630	H-15	.0047μF 250V	#	#	.0047μF 250V	#	#
C631	H-15	.0047μF 250V	#	#	.0047μF 250V	#	#
C648	G-6	0.22 μF 125V	0.22μF 300V	0.22μF 300V	0.22μF 125V	0.22μF 300V	0.22μF 300V
C655	H-6	0.47μF 125V	0.47μF 300V	0.47μF 300V	0.47μF 125V	0.47μF 300V	0.47μF 300V
C658	H-16	1000μF 25V	1000μF 25V	1000μF 25V	1000μF 25V	1000μF 25V	15000μF 25V
CN403	C-21	1-564-505-11	1-564-505-11	1-564-505-11	#	1-564-505-11	#
CN404	C-21	1-564-505-11	1-564-505-11	1-564-505-11	#	1-564-505-11	#
CN460	A-15	#	#	#	1-573-298-21	#	1-573-298-21
D230	B-13	#	#	#	RD9.1EW-T1	#	RD9.1EW-T1
D231	B-14	#	#	#	RD9.1EW-T1	#	RD9.1EW-T1
D403	E-16	MA111-TX	MA111-TX	MA111-TX	#	MA111-TX	#
D2001	K-6	LNK0120022G	LNK0120022G	LNK0120022G	LNK0120022G1	LNK022022G2	LNK01220022G1
F601	I-6	6.3A/125V	6.3A/250V	6.3A/250V	6.3A/125V	6.3A/250V	6.3A/250V
IC401	C-18	TDA7075AQ/N2	TDA7075AQ/N2	TDA7075AQ/N2	TDA7075AQ/N2	TDA7075AQ/N2	#
IC402	A-19	#	#	#	#	#	TDA8580Q/N1
IC405	H-17	NJM2521M-TE1	NJM2521M-TE1	NJM2521M-TE1	#	NJM2521M-TE1	#
IC406	H-18	NJM2521M-TE1	NJM2521M-TE1	#	#	NJM2521M-TE1	#
IC601	F-12	STR-F6624	STR-F6654	STR-F6654	STR-F6624	STR-F6654	STR-F6654
J201	G-4	1-794-118-11	1-794-118-11	1-794-115-11	1-794-119-11	1-794-118-11	1-794-119-11
J202	C-7	1-794-267-11	1-794-267-11	1-794-266-21	1-794-267-11	1-794-267-11	1-794-267-11
J205	A-14	#	#	#	1-794-116-11	#	1-794-116-11
JR470	J-18	#	#	0	#	#	#
PS401	B-17	1-576-336-21	1-576-336-21	1-576-336-21	1-576-336-21	1-576-336-21	1-532-686-21
Q410	F-18	#	#	#	2SDA601A-QRS-TX	#	2SDA601A-QRS-TX
Q503	M-11	8-729-422-27	8-729-422-27	8-729-120-28	8-729-422-27	8-729-422-27	8-729-422-27
Q506	J-9	8-729-422-27	8-729-120-28	8-729-120-28	8-729-120-28	8-729-120-28	8-729-120-28
R103	B-4	#	#	0	#	#	#
R114	B-4	#	#	0	#	#	#
R115	B-4	0	0	#	0	0	0
R206	G-4	#	#	0	#	#	#
R214	G-4	470K	470K	#	470K	470K	470K
R401	D-18	#	#	#	#	#	20K
R402	D-18	#	#	#	#	#	10K
R409	F-16	#	#	4.7K	#	#	#
R424	F-16	4.7K	4.7K	4.7K	#	4.7K	#
R425	F-16	4.7K	4.7K	0	#	4.7K	#
R426	C-18	#	#	#	#	#	22
R429	B-13	#	#	#	470K	#	470K
R430	B-13	#	#	#	1K	#	1K
R431	B-14	#	#	#	1K	#	1K
R432	E-16	10K	10K	10K	33K	10K	33K
R433	B-13	#	#	#	470K	#	470K
R436	D-14	4.7K	4.7K	4.7K	10K	4.7K	10K
R437	E-15	4.7K	4.7K	4.7K	10K	4.7K	10K
R438	E-14	4.7K	4.7K	#	10K	4.7K	10K
R439	E-15	4.7K	47K	47K	10K	4.7K	10K
R441	E-18	#	#	#	#	#	22K
R442	E-18	#	#	#	#	#	100
R443	E-3	220	220	220	#	220	#
R444	E-3	220	220	220	#	220	#
R446	D-19	#	#	#	33K	#	33K
R601	H-9	4.7M 1/2W	#	#	4.7M 1/2W	#	#
R605	H-8	1 10W	1.2 10W	1.2 10W	1 10W	1.2 10W	1.2 10W
R606	G-8	1 10W	1.2 10W	1.2 10W	1 10W	1.2 10W	1.2 10W
R615	H-9	#	8.2M	8.2M	#	8.2M	8.2M
R621	H-10	#	1.2 10W	1.2 10W	#	1.2 10W	1.2 10W
R627	H-11	390K	270K	270K	390K	270K	270K
R628	H-11	JW 5.0 MM	270K	270K	JW 5.0 MM	270K	270K
R637	H-11	JW 20.0 MM	5.6K	5.6K	JW 20.0 MM	5.6K	5.6K
R638	H-14	33	56	56	33	56	56
R660	H-11	15K 3W	5.6K 3W	5.6K 3W	15K 3W	5.6K 3W	5.6K 3W
R662	H-11	JW 20.0 MM	5.6K	5.6K	JW 20.0 MM	5.6K	5.6K
R2005	K-5	0	0	0	#	0	0
R2007	K-5	#	#	#	#	470	#
T602	H-6	1-431-419-11	1-426-717-11	1-426-717-11	1-431-419-11	1-426-717-11	1-426-717-11
T603	F-15	1-433-806-11	1-433-807-11	1-433-807-11	1-433-806-11	1-433-807-11	1-433-807-11
THP601	G-6	1-809-539-11	1-803-540-11	1-803-540-11	1-809-539-11	1-803-540-11	1-803-540-11
TU101	A-3	8-598-431-30	8-598-431-30	8-598-501-00	8-598-431-30	8-598-542-00	8-598-542-00
VDR601	I-6	1-803-585-11	1-803-967-11	1-803-967-11	1-803-585-11	1-803-967-11	1-803-967-11

#: Not Mounted

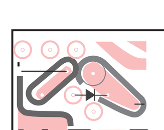
A [POWER SUPPLY, DEFLECTION, TUNER/IF, AUDIO, MTS]



A BOARD LOCATOR LIST

DIODE										TRANSISTOR			
		D504	J-10	D519	E-12	D618	I-2	D2004	A-3			Q606	I-3
D204	C-12	D505	I-8	D520	G-14	D619	E-2	D2005	A-2	Q101	A-11	Q607	E-2
D208	A-13	D506	F-10	D601	D-2	D620	E-8	IC		Q410	B-9	Q608	E-2
D209	C-13	D507	F-10	D602	F-2	D622	G-3	IC402	D-11	Q411	E-9	Q609	A-5
D210	B-13	D508	E-11	D605	E-4	D623	G-3	IC405	C-13	Q501	I-8		
D212	B-1	D509	J-6	D610	C-5	D624	I-2	IC406	D-13	Q502	I-9		
D213	B-2	D510	F-12	D611	D-7	D625	I-2	IC501	E-11	Q503	E-10		
D230	D-14	D511	H-12	D612	E-2	D626	H-1	IC502	F-13	Q504	F-10		
D231	D-13	D513	G-12	D613	D-7	D627	J-2	IC601	C-6	Q505	H-14		
D401	D-10	D514	G-13	D614	D-7	D628	I-2	IC602	D-8	Q506	A-7		
D403	C-9	D516	H-14	D615	G-6	D2001	F-2	IC603	E-8	Q507	A-7		
D502	I-10	D517	G-14	D616	G-7	D2002	H-1	IC604	D-9	Q604	A-6		
D503	I-11	D518	G-14	D617	I-2	D2003	C-1	IC2001	G-1	Q605	I-3		

#: Not Mounted



NOTE:
Portions of the circuit marked as shown are high voltage areas. Use care to prevent electric shocks during inspection or repair.

A BOARD IC VOLTAGE LIST

IC401		IC402		IC405		IC406		IC501		IC502		IC601		IC602		IC603		IC604		IC2001	
pin	volt	pin	volt	pin	volt	pin	volt	pin	volt	pin	volt	pin	volt	pin	volt	pin	volt	pin	volt	pin	volt
1	0.6	1	6.8	1	6.0	1	6.0	1	0.2	1	2.1	1	-31.8	1	135.9	1	13.3	1	13.3	1	5.0
2	0.0	2	GND	2	0.1	2	0.1	2	3.7	2	14.0	2	-32.7	2	123.4	2	8.9	2	5.0	2	5.0
3	2.4	3	14.1	3	6.1	3	6.1	3	-2.5	3	-12.6	3	53.2	3	GND	3	GND	3	GND	3	GND
4	14.3	4	6.8	4	0.1	4	0.1	4	GND	4	-13.9	4	-23.8			4	13.3				
5	2.4	5	4.3	5	6.1	5	6.1	5	9.5	5	0.2	5	-32.7								
6	0.0	6	NC	6	9.0	6	9.0	6	10.1	6	14.3										
7	0.6	7	4.1	7	5.3	7	5.3	7	0.1	7	2.1										
8	6.9	8	4.1	8	GND	8	GND	8	14.0												
9	0.0	9	6.8			10	4.1														
10	6.9					11	6.2														
11	6.9					12	0.2														
12	0.0					13	6.2														
13	6.9					14	9.1														
						15	5.4														
						16	GND														
						17	6.2														

All voltages are in V

TU101			
pin	volt	pin	volt
1	8.6	14	N/C
2	30.7	15	N/C
3	5.1	16	N/C
4	4.9	17	4.7
5	4.9	18	4.4
6	GND	19	5.0
7	5.5	20	5.0
8	2.1	21	0.3
9	8.9	22	0.0
10	4.1	23	0.0
11	0.0	24	0.0
12	N/C	25	0.0
13	N/C	26	4.5

A BOARD TRANSISTOR VOLTAGE LIST

	B	C	E		B	C	E
Q101	0.0	5.6	0.0	Q506	0.0	0.0	0.0
Q410	0.0	5.2	0.0	Q507	0.0	0.0	0.0
Q411	5.3	0.0	5.2	Q604	0.1	4.1	0.0
Q501	0.0	93.3	-0.6	Q606	-36.1	-35.3	-36.3
Q502	-0.1	133	0.0	Q607	0.7	0.1	0.0
Q503	0.2	3.8	0.0	Q608	0.0	0.7	0.0
Q504	0.1	-6.5	0.0	Q609	0.0	13.9	0.0
Q505	134.9	1.8	135.5				

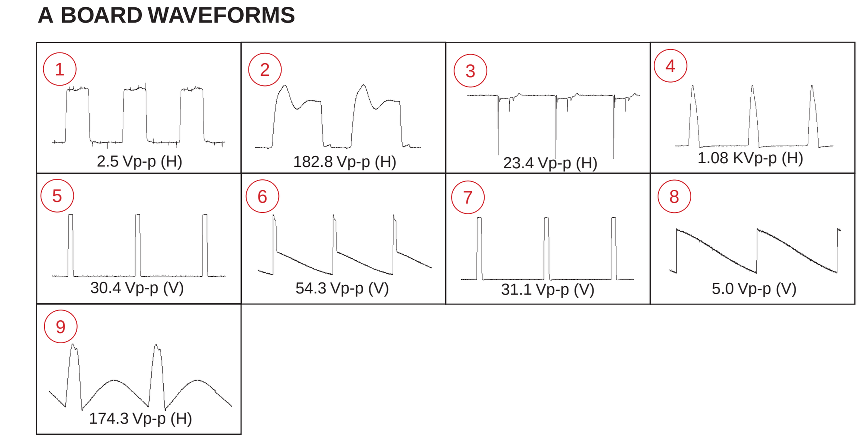
All voltages are in V

A BOARD TRANSISTOR VOLTAGE LIST

	G	D	S
Q605	40.8	-35.6	36.8

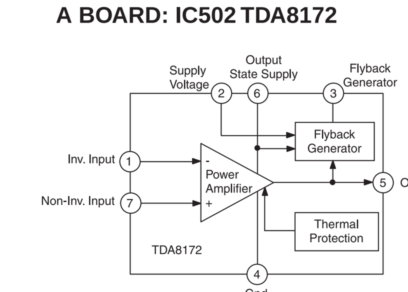
All voltages are in V

A BOARD WAVEFORMS

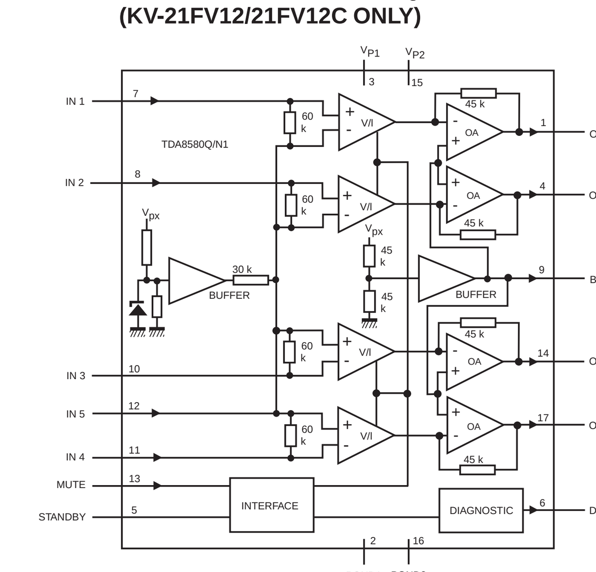


A BOARD IC BLOCK DIAGRAMS

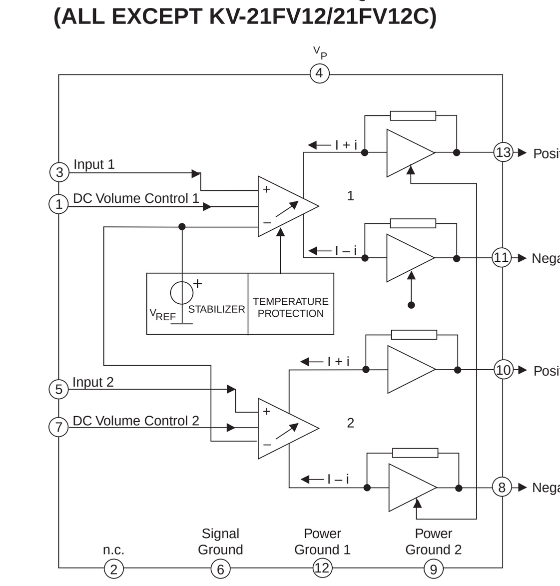
A BOARD: IC502 TDA8172



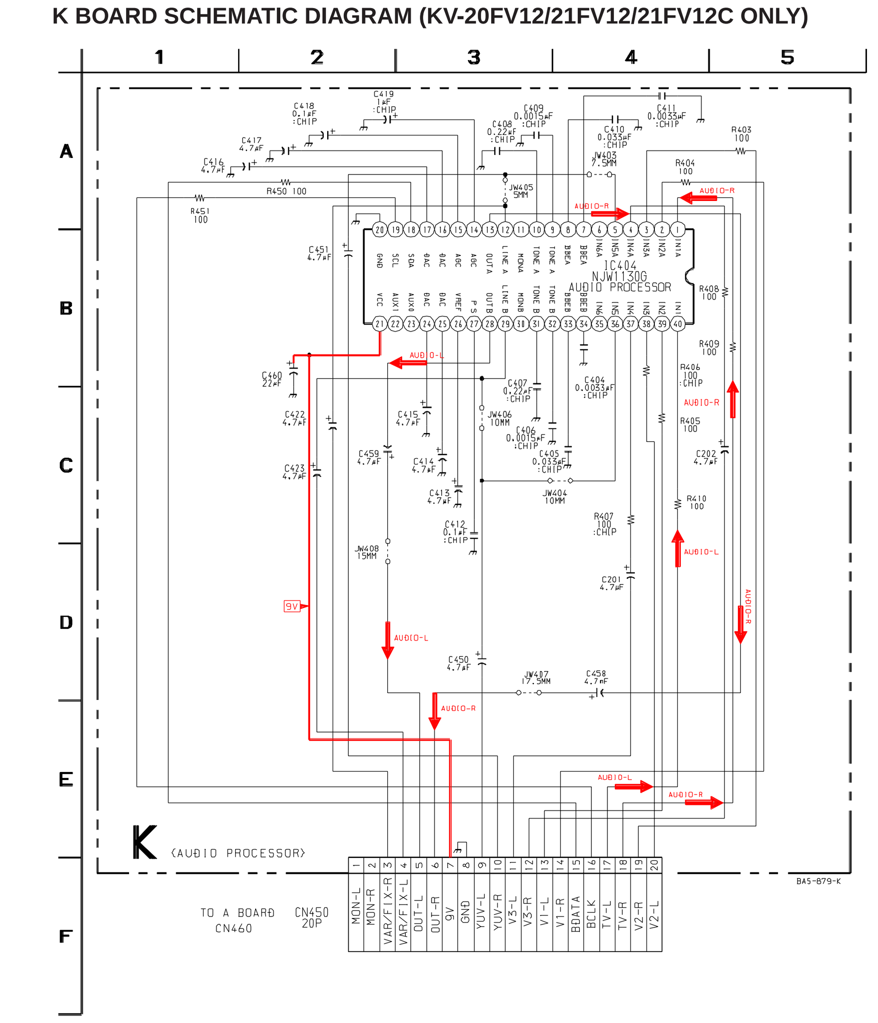
A BOARD: IC402 TDA8580Q/N1 (KV-21FV12/21FV12C ONLY)



A BOARD: IC401 TDA7057AQ/N2 (ALL EXCEPT KV-21FV12/21FV12C)



K BOARD SCHEMATIC DIAGRAM (KV-20FV12/21FV12/21FV12C ONLY)

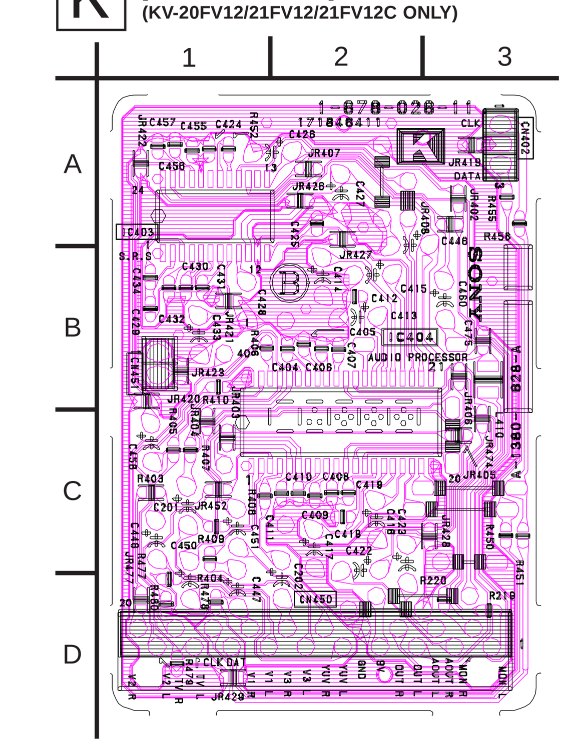


K BOARD IC VOLTAGES

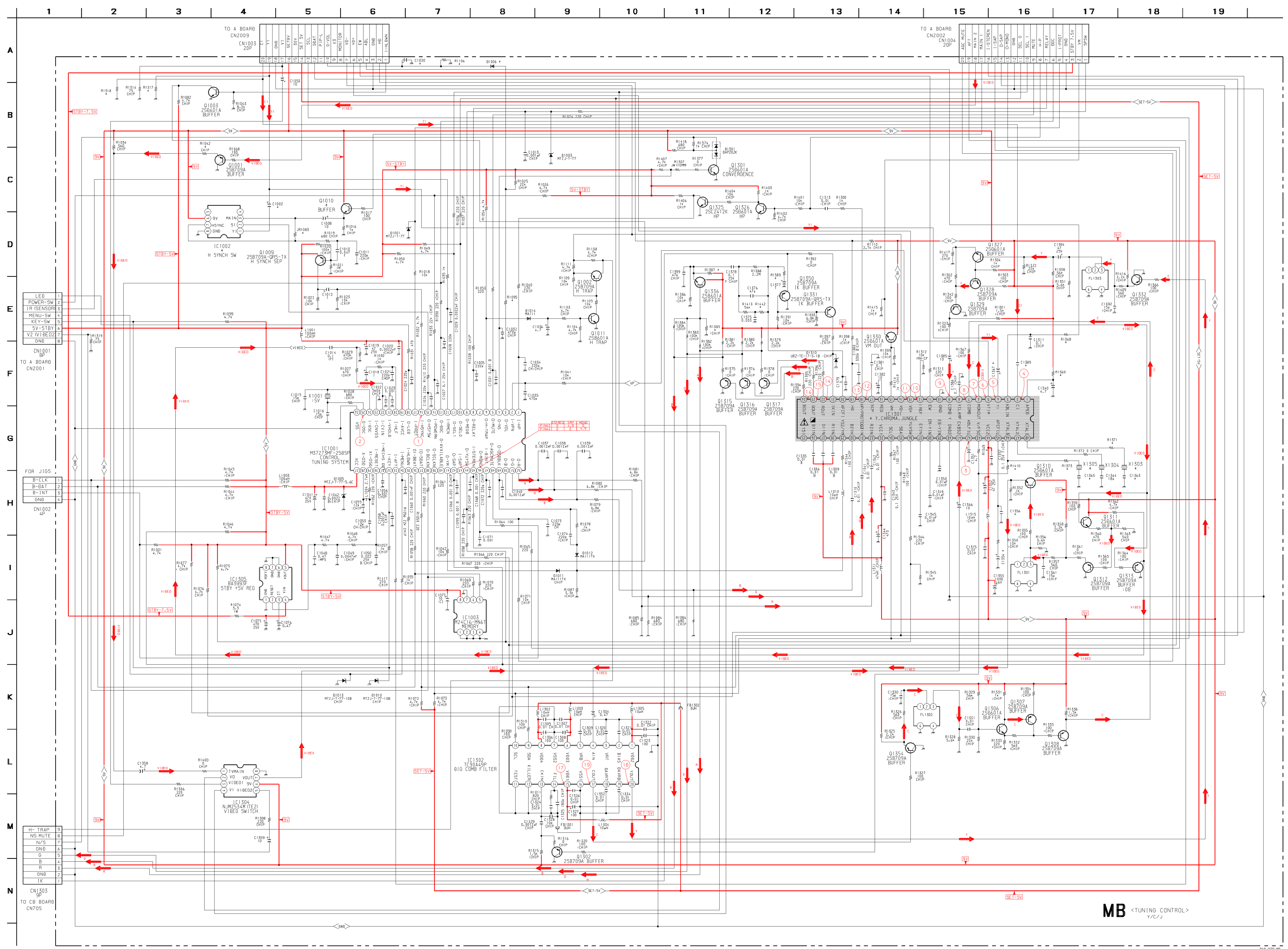
IC404			
pin	volt	20	GND
		21	8.9
1	4.5	22	NC
2	4.5	23	NC
3	4.5	24	1.3
4	4.5	25	1.3
5	4.5	26	4.4
6	NC	27	3.9
7	4.7	28	4.5
8	4.5	29	4.5
9	4.5	30	NC
10	4.5	31	4.5
11	NC	32	4.5
12	4.5	33	4.5
13	4.5	34	4.5
14	1.0	35	NC
15	4.5	36	4.5
16	0.9	37	4.5
17	0.9	38	4.5
18	4.8	39	4.5
19	4.9	40	4.5

All voltages are in V

K [AUDIO PROCESSOR] (KV-20FV12/21FV12/21FV12C ONLY)



MB BOARD SCHEMATIC DIAGRAM



← A & K Boards MB Board →

MB BOARD MARK (*) LIST

REF NO.	LOC.	KV-20FS12 KV-21FE12 KV-21FE12C	KV-20FV12 KV-21FV12 KV-21FV12C	KV-21FE12A	KV-21FM12
C1002	C-4	#	10μF	#	#
C1030	A-6	4.7μF	#	4.7μF	#
C1354	I-15	.47μF	.47μF	.22μF	.47μF
C1356	H-16	470PF	470PF	220PF	470PF
C1363	H-18	#	#	18PF	#
C1365	H-17	#	#	18PF	#
C1367	F-15	#	10μF	#	#
C1379	F-13	0.01μF	0.01μF	0.0047μF	0.01μF
C1389	F-16	#	0.1μF	#	#
D1006	A-8	MA111-TX	MA111-TX	MA111-TX	MA111-TX
IC1002	D-4	#	NJM2534M(TE2)	#	#
IC1301	F-12	CXA2131AS	CXA2131AS	CXA2135S	CXA2131AS
JR1083	D-5	0	#	#	0
Q1010	C-6	2SC2412K-T-146-QRS	2SD601A-QRS-TX	2SD601A-QRS-TX	2SD601A-QRS-TX
R1042	C-3	470	470	#	560
R1095	E-8	3.3K	#	3.3K	3.3K
R1106	A-7	33K	#	33K	#
R1317	B-3	#	75	#	#
R1318	B-2	#	75	#	#
R1349	G-15	#	#	0	#
R1368	E-17	2.2K	#	2.2K	2.2K
R1369	F-17	#	#	4.7M	#
R1371	G-18	#	#	0	#
R1373	H-16	#	#	0	#
R1385	E-11	470K	470K	#	470K
R1387	D-11	82K	82K	33K	8.2K
R1389	D-12	8.2K	8.2K	15K	8.2K
R1410	G-16	0	0	#	0
R1442	E-12	180K	180K	270K	180K
X1303	H-18	#	#	1-579-973-11	#
X1305	H-17	#	#	1-579-972-11	#

#: Not Mounted

MB BOARD TRANSISTOR VOLTAGE LIST

Q1001		Q1011		Q1308		Q1315		Q1327		Q1332	
pin	volt	pin	volt	pin	volt	pin	volt	pin	volt	pin	volt
B	4.8	B	0.0	B	5.7	B	1.4	B	2.4	B	2.4
E	5.4	E	0.0	E	6.3	E	2.0	E	1.8	E	3.0
C	0.0	C	3.5	C	0.0	C	0.0	C	7.6	C	0.0
Q1002		**Q1301**		**Q1310**		**Q1316**		**Q1328**		**Q1336**	
pin	volt	pin	volt	pin	volt	pin	volt	pin	volt	pin	volt
B	3.5	B	0.4	B	2.4	B	1.6	B	7.6	B	2.0
E	3.5	E	0.0	E	1.8	E	2.2	E	8.3	E	1.7
C	3.5	C	2.3	C	8.7	C	0.0	C	4.5	C	8.9
Q1003		**Q1302**		**Q1311**		**Q1317**		**Q1329**		**Q1350**	
pin	volt	pin	volt	pin	volt	pin	volt	pin	volt	pin	volt
B	0.0	B	4.6	B	0.0	B	1.5	B	4.5	B	2.0
E	0.0	E	5.2	E	3.7	E	2.2	E	5.1	E	1.7
C	5.0	C	0.0	C	8.9	C	0.0	C	0.0	C	8.9
Q1009		**Q1306**		**Q1312**		**Q1325**		**Q1330**		**Q1354**	
pin	volt	pin	volt	pin	volt	pin	volt	pin	volt	pin	volt
B	5.2	B	2.4	B	2.0	B	0.6	B	4.9	B	0.0
E	5.0	E	1.8	E	0.0	E	0.0	E	4.3	E	3.2
C	0.8	C	7.5	C	0.0	C	0.7	C	8.9	C	0.0
Q1010		**Q1307**		**Q1313**		**Q1326**		**Q1331**			
pin	volt	pin	volt	pin	volt	pin	volt	pin	volt		
B	4.5	B	0.0	B	4.3	B	0.0	B	3.6		
E	3.8	E	8.2	E	5.0	E	0.0	E	3.6		
C	8.7	C	5.7	C	0.0	C	3.8	C	1.6		

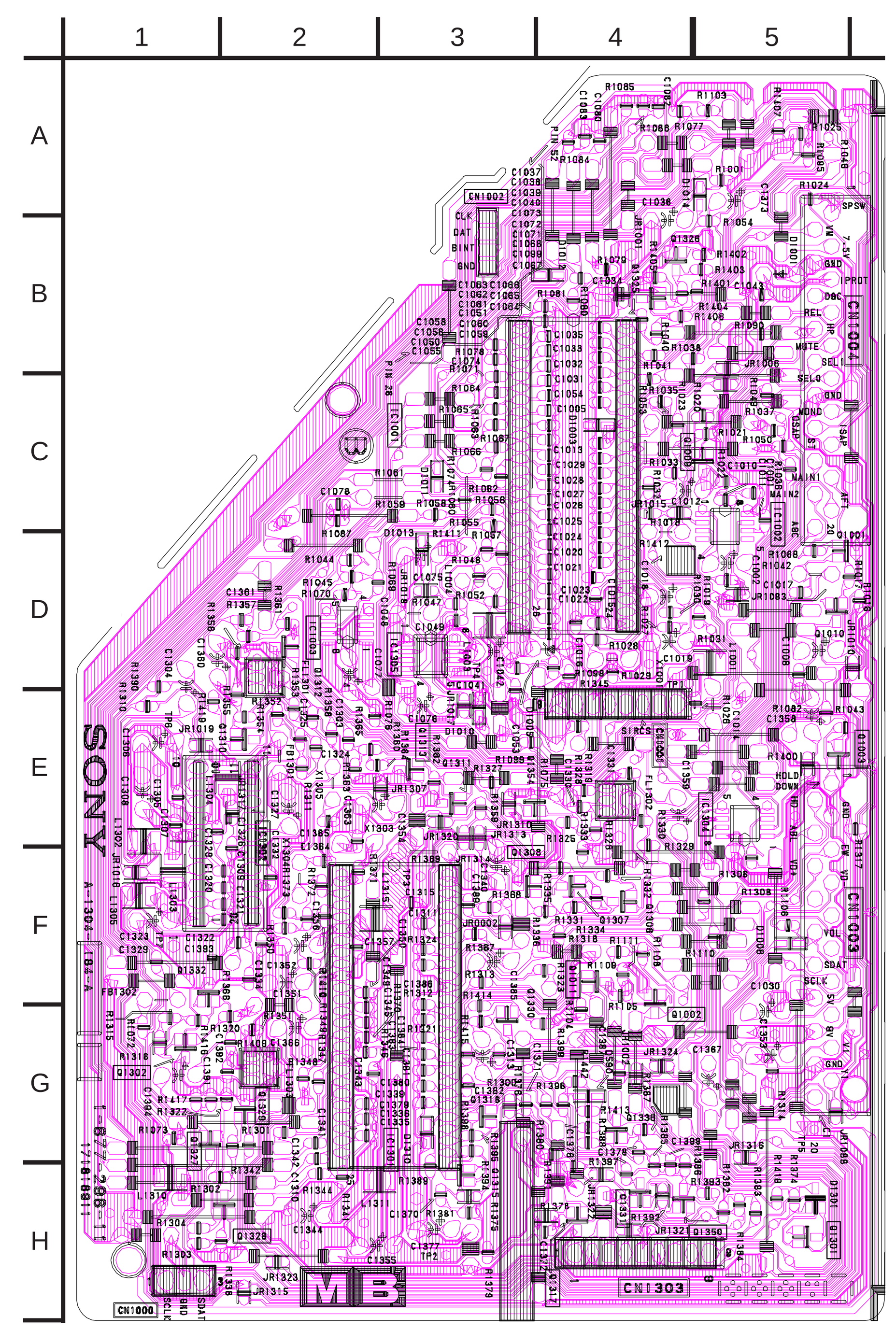
All voltages are in V

MB BOARD IC VOLTAGE LIST

IC1001		36	4.8	**IC1301**		36	0.2	**IC1304**	
pin	volt	37	4.8	pin	volt	37	4.6	pin	volt
1	1.7	38	4.8	1	3.3	38	5.3	1	4.6
2	4.8	39	4.8	2	5.1	39	5.3	2	0.1
3	0.0	40	NC	3	1.3	40	GND	3	4.6
4	0.4	41	0.0	4	5.1	41	5.1	4	0.1
5	0.0	42	0.1	5	4.8	42	6.2	5	4.6
6	0.1	43	5.0	6	4.3	43	5.1	6	8.9
7	NC	44	0.1	7	6.3	44	8.7	7	3.8
8	0.0	45	5.0	8	5.0	45	5.2	8	GND
9	0.0	46	0.0	9	5.1	46	4.6	**IC1305**	
10	0.1	47	5.0	10	GND	47	1.7	pin	volt
11	0.1	48	0.0	11	4.1	48	0.2	1	GND
12	5.0	49	0.0	12	2.4	**IC1302**		2	5.0
13	0.0	50	0.0	13	3.5	pin	volt	3	1.6
14	4.3	51	0.0	14	3.5	1	5.0	4	7.4
15	4.9	52	0.0	15	5.4	2	1.4	5	5.0
16	0.0	**IC1002**		16	7.7	3	3.2	6	GND
17	-0.2	pin	volt	17	1.6	4	2.4	7	GND
18	4.9	1	4.6	18	3.5	5	1.9	8	5.0
19	5.0	2	4.8	19	2.3	6	5.0		
20	2.1	3	4.6	20	2.6	7	0.0		
21	0.2	4	NC	21	1.5	8	5.0		
22	2.3	5	NC	22	1.5	9	4.9		
23	GND	6	8.9	23	1.6	10	4.9		
24	2.2	7	3.8	24	1.4	11	0.0		
25	2.3	8	GND	25	NC	12	0.0		
26	0.0	**IC1003**		26	4.6	13	2.5		
27	4.9	pin	volt	27	4.6	14	2.1		
28	2.2	1	GND	28	4.6	15	5.0		
29	2.3	2	GND	29	0.0	16	0.0		
30	5.0	3	GND	30	4.5	17	2.5		
31	0.0	4	GND	31	4.5	18	3.2		
32	5.0	5	4.8	32	4.5	19	1.9		
33	2.4	6	4.8	33	8.7	20	2.4		
34	4.4	7	GND	34	4.9				
35	5.0	8	5.0	35	4.8				

All voltages are in V

MB [TUNING CONTROL, YCJ]

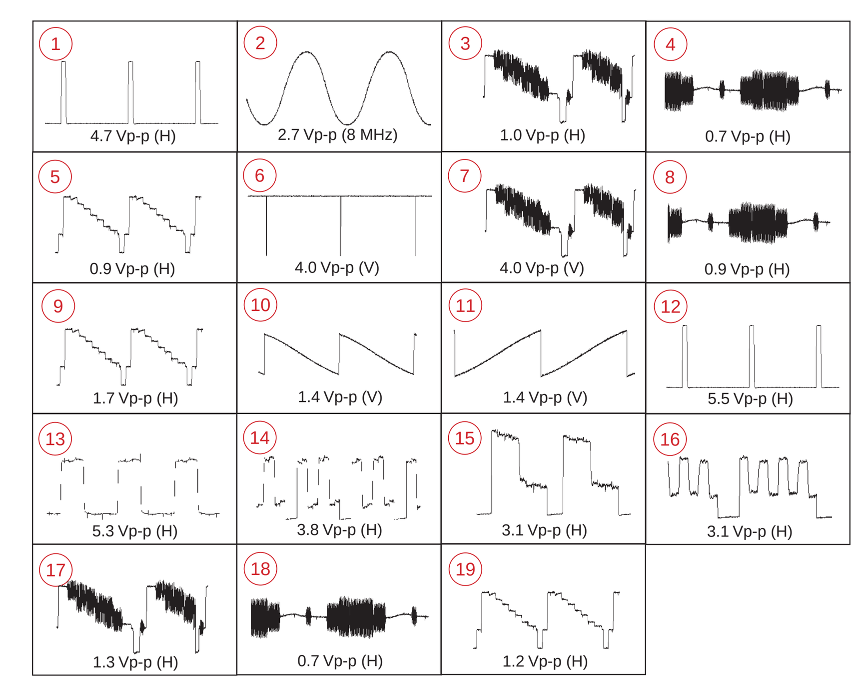


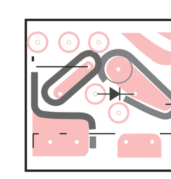
MB BOARD LOCATOR LIST

DIODE		D1013	C-2	IC1003	D-2	Q1002	G-4	Q1306	F-4	Q1315	H-3	Q1329	G-2	**CRYSTAL**	
D1001	B-5	D1014	A-4	IC1301	G-2	Q1003	E-5	Q1307	F-4	Q1316	G-3	Q1330	G-3	X1001	D-4
D1003	C-3	D1301	H-5	IC1302	E-2	Q1009	G-2	Q1308	F-3	Q1317	H-3	Q1331	H-4	X1303	E-2
D1005	E-3	D1310	G-3	IC1304	E-4	Q1010	D-5	Q1310	E-1	Q1325	B-4	Q1332	F-1	X1304	E-2
D1010	E-2	**IC**		IC1305	D-2	Q1011	F-3	Q1311	E-3	Q1326	B-4	Q1336	G-4	X1305	E-2
D1011	C-3	IC1001	C-2	**TRANSISTOR**		Q1301	H-5	Q1312	D-2	Q1327	G-1	Q1350	H-4		
D1012	B-3	IC1002	C-5	Q1001	D-5	Q1302	G1	Q1313	E-3	Q1328	H-2	Q1354	E-3		

#: Not Mounted

MB BOARD WAVEFORMS

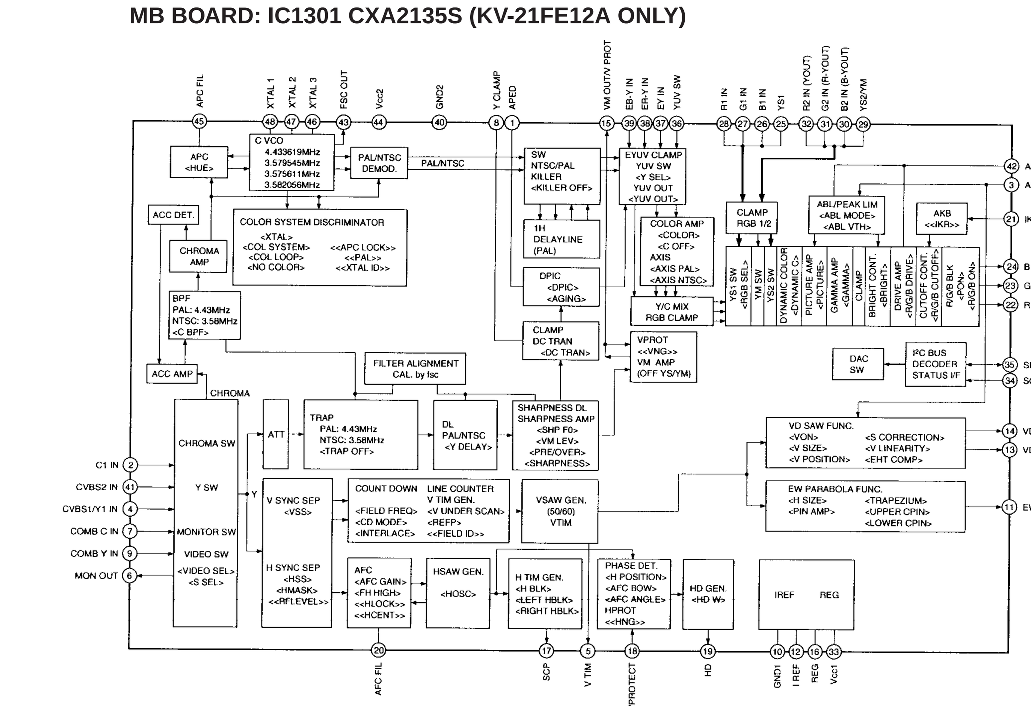




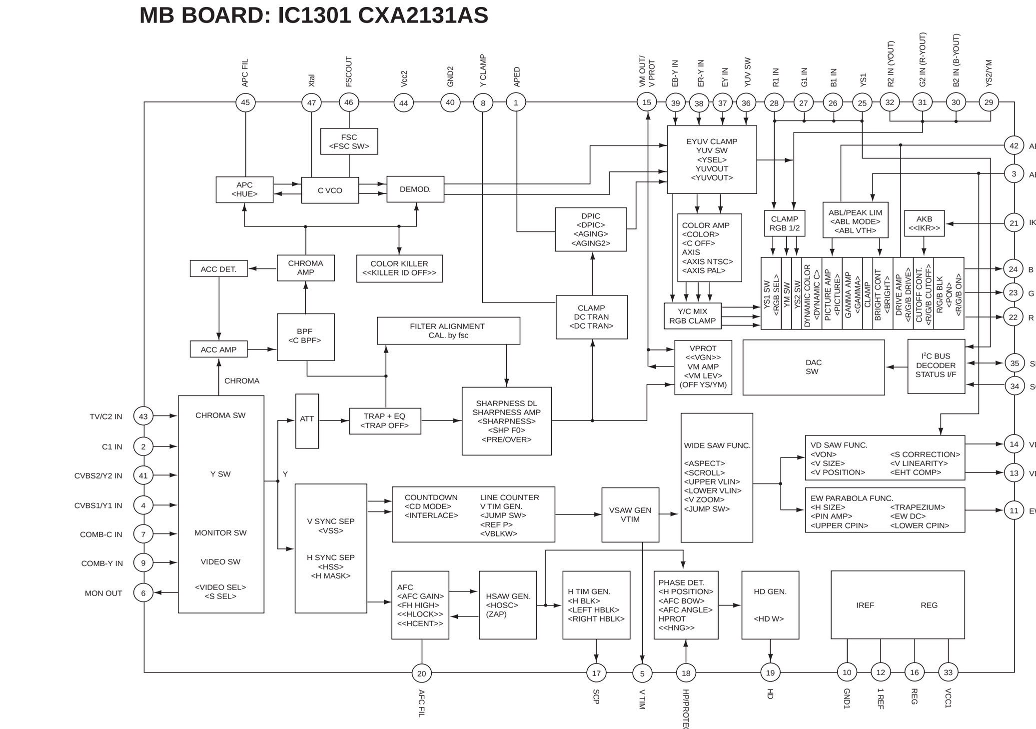
NOTE:
Portions of the circuit marked as shown are high voltage areas. Use care to prevent electric shocks during inspection or repair.

MB BOARD IC BLOCK DIAGRAMS

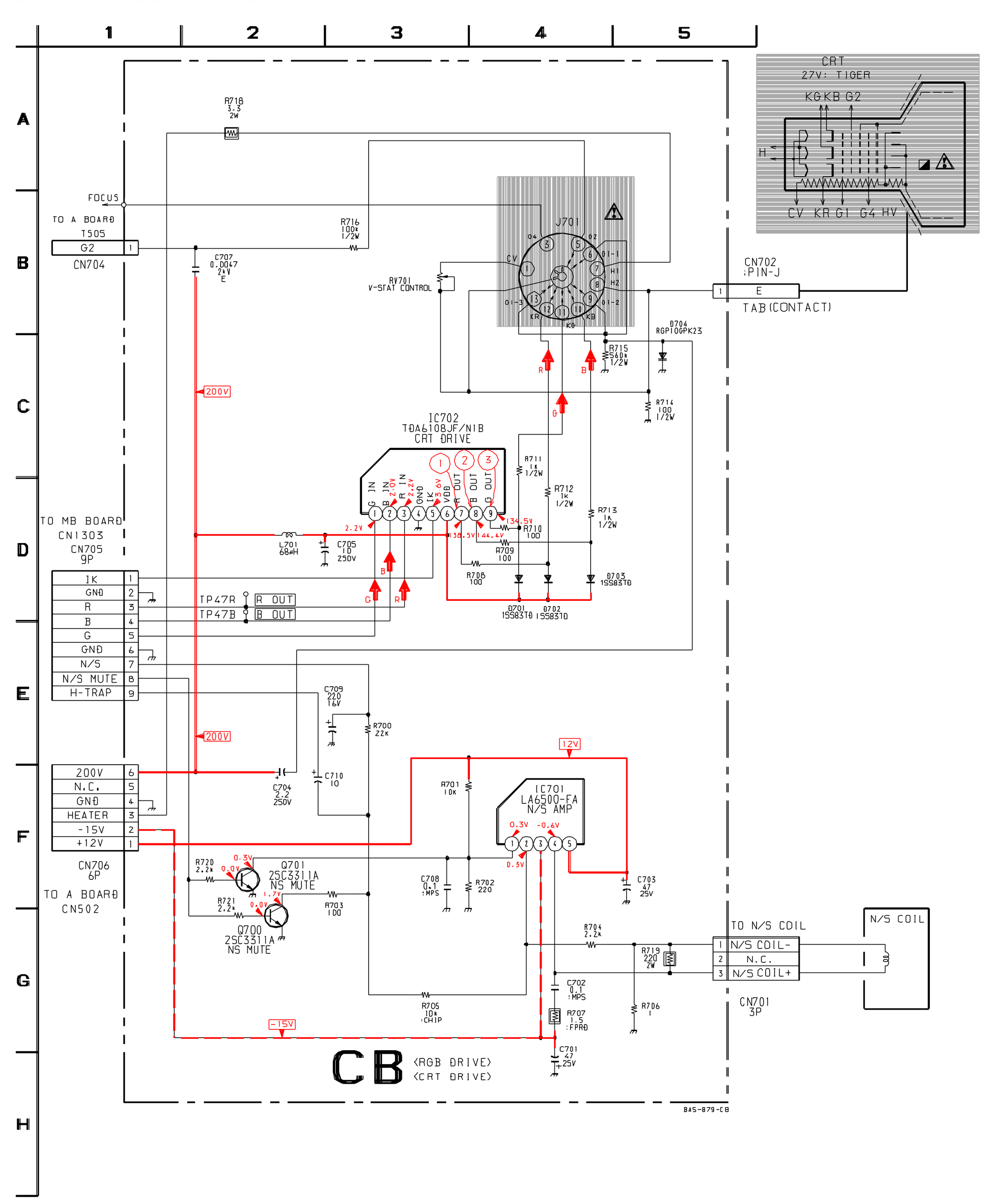
MB BOARD: IC1301 CXA2135S (KV-21FE12A ONLY)



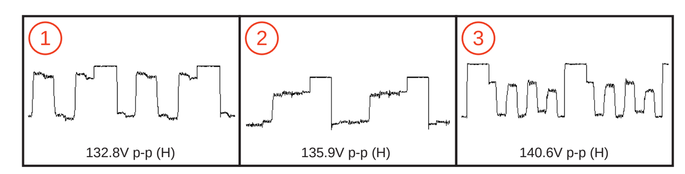
MB BOARD: IC1301 CXA2131AS



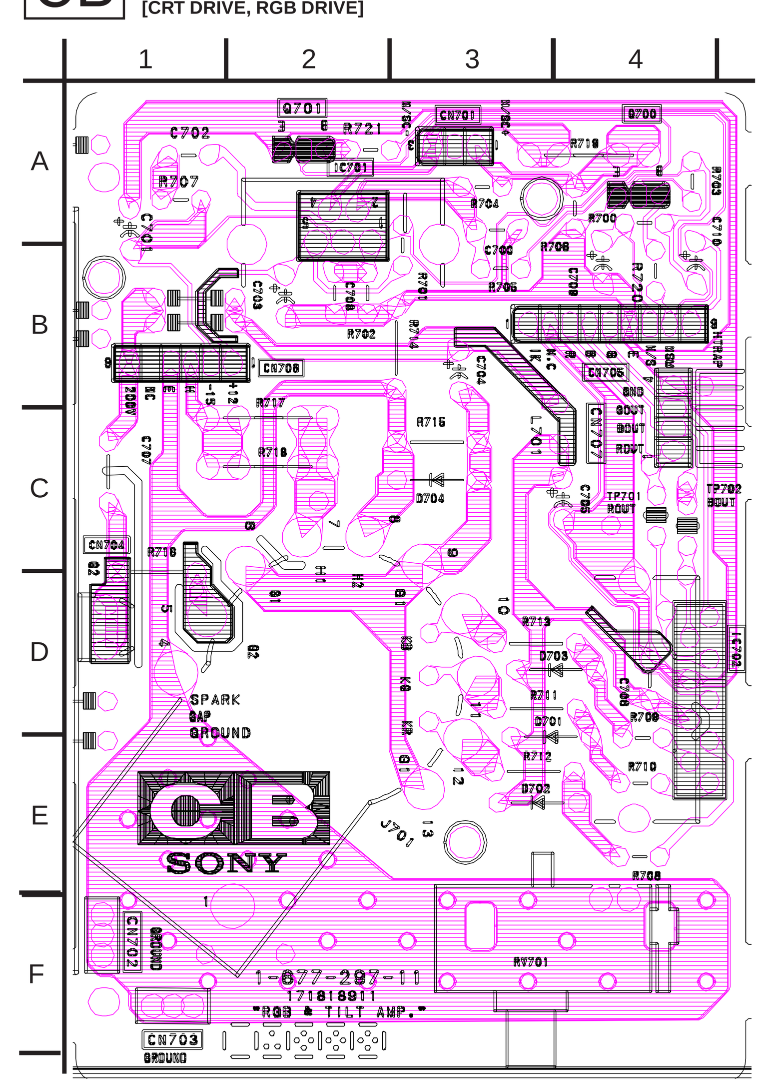
CB BOARD SCHEMATIC DIAGRAM



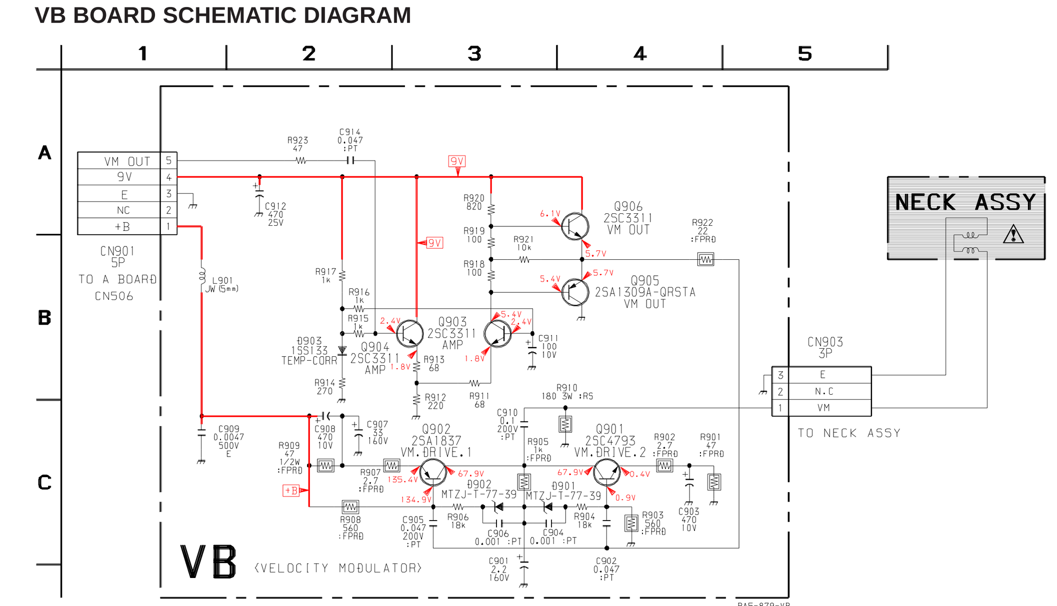
CB BOARD WAVEFORMS



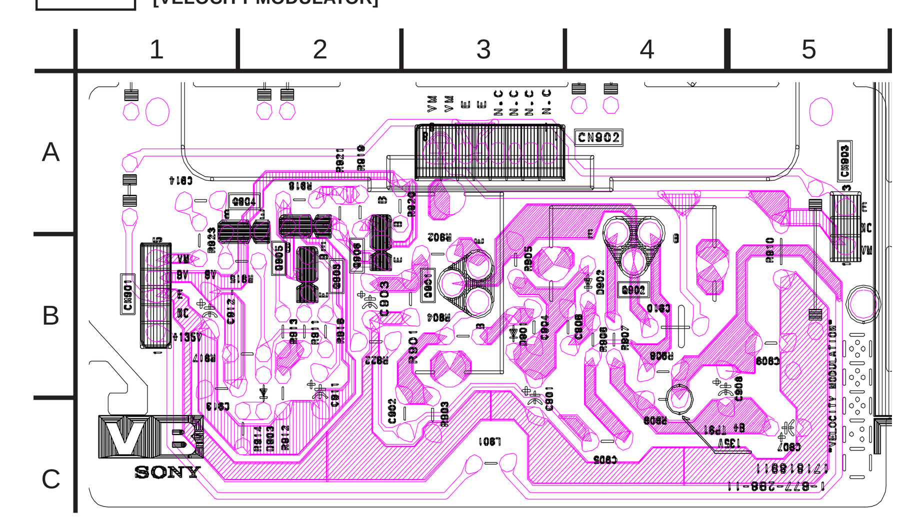
CB [CRT DRIVE, RGB DRIVE]



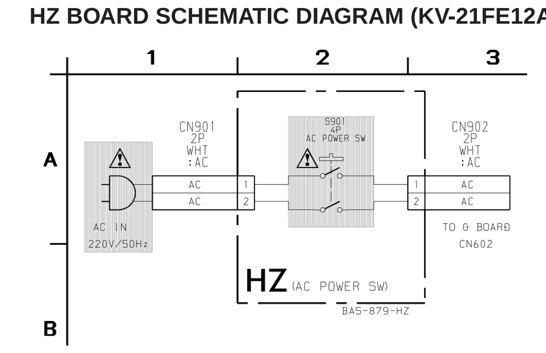
VB BOARD SCHEMATIC DIAGRAM



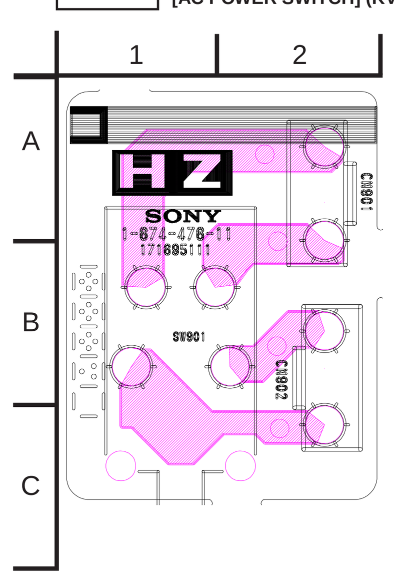
VB [VELOCITY MODULATOR]

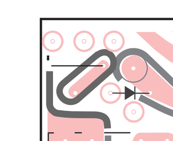


HZ BOARD SCHEMATIC DIAGRAM (KV-21FE12A ONLY)



HZ [AC POWER SWITCH] (KV-21FE12A ONLY)



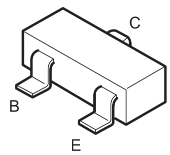


NOTE:
Portions of the circuit marked as shown are high voltage areas. Use care to prevent electric shocks during inspection or repair.

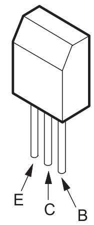
← MB Board CB VB & HZ Boards →

6-4. SEMICONDUCTORS

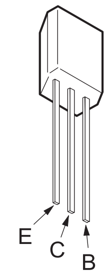
2SB709A-QRS-TX
2SD601A-QRS-TX
2SC2412K-T-146-QR



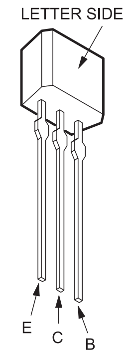
2SC3209LK-TP



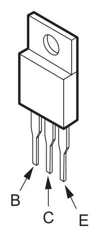
2SC331740S-QRT



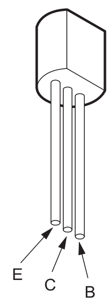
2SA1309A-QRT
2SC3311A-QRSTA
2SD2144S-TP-UVW



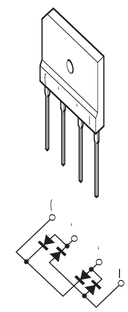
2SA1837
2SC4159-E



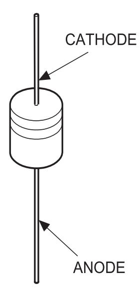
2SA1091O-TPE2
2SA993AS-QRT



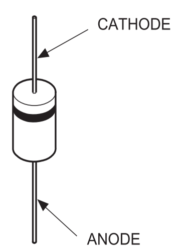
2SK2845-LB102



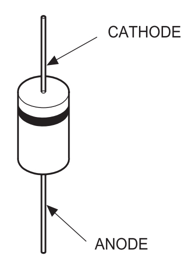
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D1N2OR-TA
D1NS4-TA
MTZJ-T-7712C
MTZJ-T-77-39
RD8.2ES-T1B



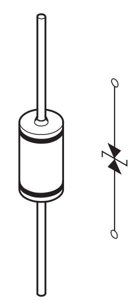
ERC06-15S
MTZJ-T-77-5.1C
MTZJ-T-775.6C
MTZJ-T-77-7.5A
MTZJ-T-77-8.2B
MTZJ-T-77-10B
MTZJ-T-7730D
RD10ES-T1B



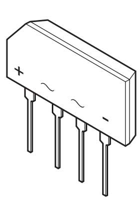
1SS83TD
D1NL2OU-TA
EL1Z-V1
ERA22-08TP3
GP08DPKG23
RGP10GPKG23
RU4AM-T3



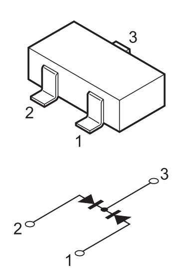
RD9.1EW-T1



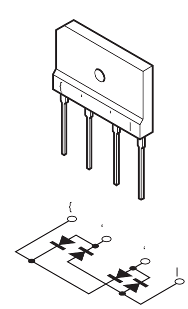
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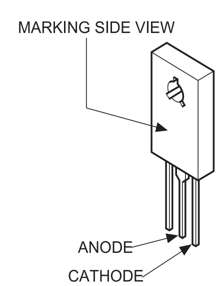
DAP202K-T-146



D4SB60L-F



D5LC20U



SECTION 7
EXPLODED VIEW

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The component parts of an assembly are indicated by the reference numbers in the remarks column.
- Items marked * are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note:

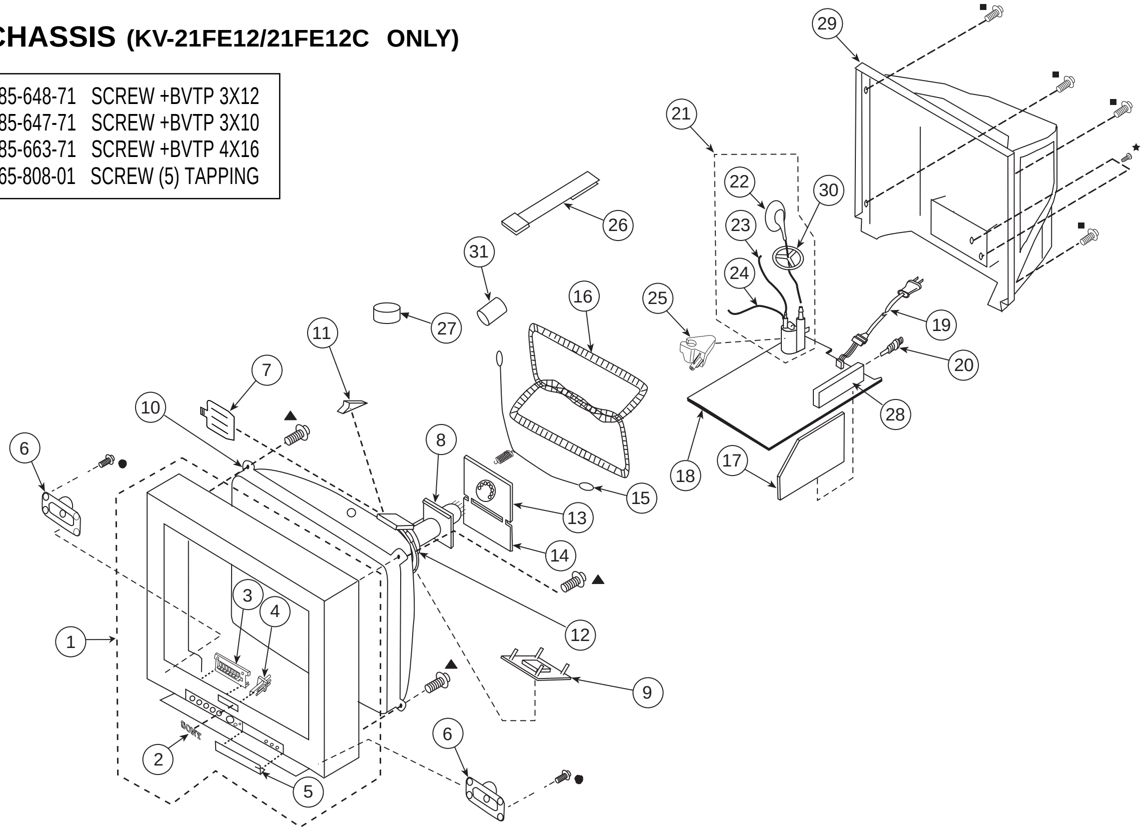
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

7-1. CHASSIS (KV-21FE12/21FE12C ONLY)

●	7-685-648-71	SCREW +BVTP 3X12
★	7-685-647-71	SCREW +BVTP 3X10
■	7-685-663-71	SCREW +BVTP 4X16
▲	4-365-808-01	SCREW (5) TAPPING



REF. NO.		PART NO.	DESCRIPTION	REMARK
1		X-4037-400-1	BEZNET ASSY	2-5
2		4-046-161-01	EMBLEM (NO.8), SONY	
3		4-073-931-01	BUTTON, MULTI	
4		4-073-933-01	GUIDE, LED	
5		4-073-932-11	DOOR	
6		1-529-613-11	SPEAKER (9X5CM)	
7		4-057-714-01	PIECE ASSY, TLH CORRECTION	
8		1-416-864-12	COIL, VM	
9		1-452-728-61	COIL, NA ROTATION (RT-154)	
10	⚠	8-738-823-05	CRT 21RSN(FOR EQUATORIAL AREA) (KV-21FE12C ONLY)	
10	⚠	8-738-822-05	CRT 21RSN(FOR NORTH AMERICA) (KV-21FE12 ONLY)	
11		4-053-005-01	SPACER, DY	
12	⚠	8-451-505-31	DY Y21RSA-X	
13	*	A-1332-035-A	CB (VAR) MOUNTED PC BOARD	
14	*	A-1342-537-A	VB (VAR) MOUNTED PC BOARD	
15	*	4-375-394-01	SPRING, TENSION	
16	⚠	1-419-288-21	COIL, DEGAUSSING	

REF. NO.		PART NO.	DESCRIPTION	REMARK
17	*	A-1304-183-A	MB (VAR) MOUNTED PC BOARD	
18	*	A-1299-174-A	A COMPLETE PC BOARD	
			The high-voltage leads associated with the FBT on this board are not included and must be ordered separately. (See 22-24)	
19	⚠	1-790-316-21	CORD, AC POWER(WITH CONNECTOR) (KV-21FE12 ONLY)	
19	⚠	1-769-796-31	CORD, POWER (WITH CONNECTOR) (KV-21FE12C ONLY)	
20		1-766-374-11	PLUG, F-PIN	
21	⚠	1-453-316-21	FBT ASSY NX-1748//X4A4	22-24
22		1-251-642-52	HV CAP ASSY	
23		1-900-800-65	FOCUS LEAD	
24		1-900-803-22	G2 LEAD	
25		4-071-497-01	HOLDER, FBT	
26		4-062-047-01	PIECE A(110), CONV CORRECT	
27		1-452-032-00	MAGNET,DISC	
28	⚠	8-598-431-30	TUNER, FSS BTF-WA411	
29		4-073-934-01	COVER, REAR	
30		3-704-372-31	HOLDER, HV CABLE	

Note:

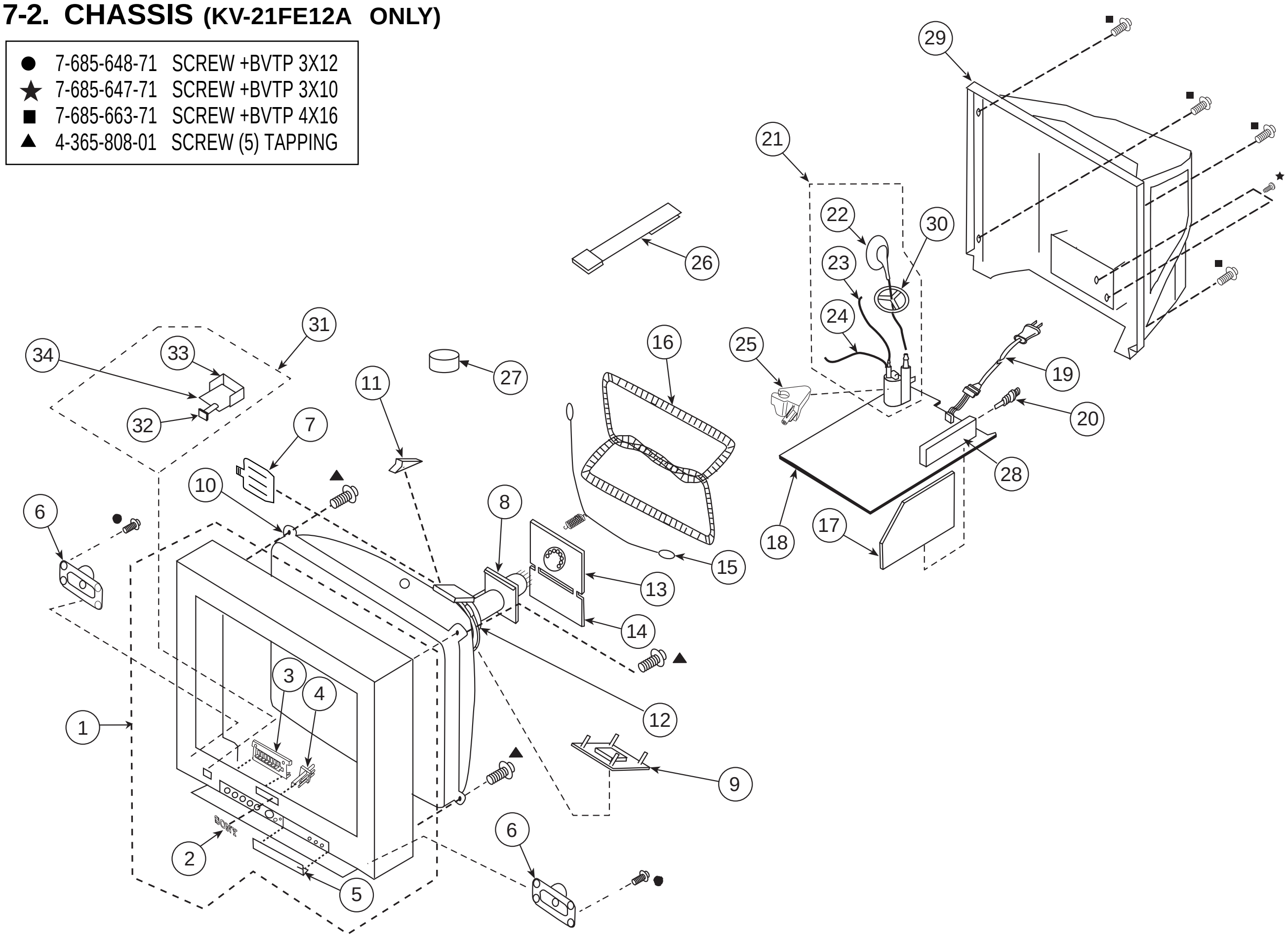
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

7-2. CHASSIS (KV-21FE12A ONLY)

●	7-685-648-71	SCREW +BVTP 3X12
★	7-685-647-71	SCREW +BVTP 3X10
■	7-685-663-71	SCREW +BVTP 4X16
▲	4-365-808-01	SCREW (5) TAPPING



REF. NO.		PART NO.	DESCRIPTION	REMARK
1		X-4037-711-1	BEZNET ASSY, ARG	2-5
2		4-046-161-01	EMBLEM (NO.8), SONY	
3		4-073-931-01	BUTTON, MULTI	
4		4-073-933-11	GUIDE, LED	
5		4-073-932-11	DOOR	
6		1-529-613-11	SPEAKER (9X5CM)	
7		4-057-714-01	PIECE ASSY, TLH CORRECTION	
8		1-416-864-12	COIL, VM	
9		1-452-728-61	COIL, NA ROTATION (RT-154)	
10	⚠	8-738-823-05	CRT 21RSN(FOR EQUATORIAL AREA)	
11		4-053-005-01	SPACER, DY	
12	⚠	8-451-505-31	DY Y21RSA-X	
13	*	A-1332-035-A	CB (VAR) MOUNTED PC BOARD	
14	*	A-1342-537-A	VB (VAR) MOUNTED PC BOARD	
15	*	4-375-394-01	SPRING, TENSION	
16	⚠	1-419-288-21	COIL, DEGAUSSING	
17		A-1304-194-A	MB (VAR) MOUNTED PC BOARD	
18		A-1299-204-A	A COMPLETE PC BOARD**	

**The high-voltage leads associated with the FBT on this board are not included and must be ordered separately. (See 22-24)

REF. NO.		PART NO.	DESCRIPTION	REMARK
19	⚠	1-783-838-31	CORD, POWER (WITH CONNECTOR)	
20		1-766-374-11	PLUG, F-PIN	
21	⚠	1-453-316-21	FBT ASSY NX-1748//X4A4	22-24
22		1-251-642-52	HV CAP ASSY	
23		1-900-800-65	FOCUS LEAD	
24		1-900-803-22	G2 LEAD	
25		4-071-497-01	HOLDER, FBT	
26		4-062-047-01	PIECE A(110), CONV CORRECT	
27		1-452-032-00	MAGNET,DISC	
28	⚠	8-598-542-00	TUNER, FSS BTF-WA412	
29		4-073-934-01	COVER, REAR	
30		3-704-372-31	HOLDER, HV CABLE	
31		A-1484-796-A	HZ BLOCK ASSY	32-34
32		4-074-687-01	BUTTON, POWER	
33		4-052-635-01	MAIN POWER BRACKET	
34	*	A-1372-117-A	HZ MOUNTED PWB	

Note:

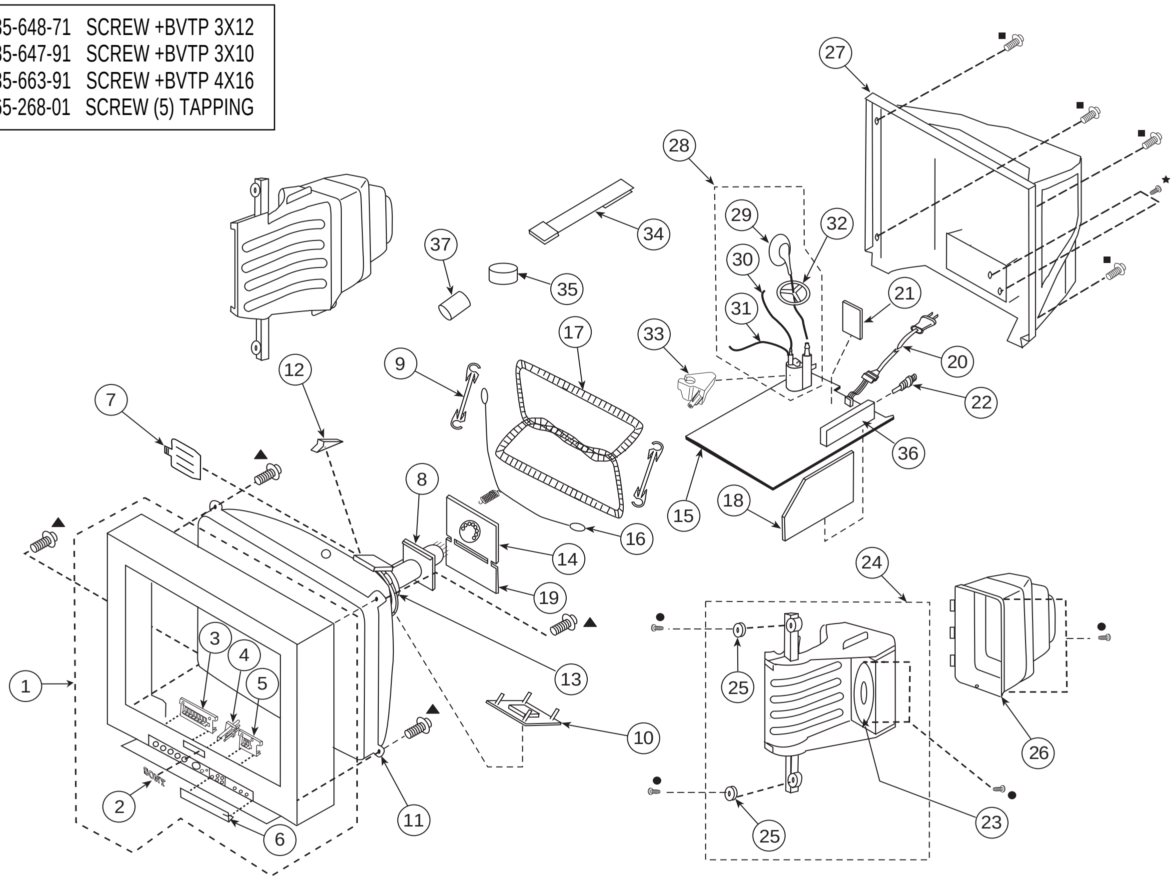
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

7-3. CHASSIS (KV-20FV12/21FV12/21FV12C ONLY)

●	7-685-648-71	SCREW +BVTP 3X12
★	7-685-647-91	SCREW +BVTP 3X10
■	7-685-663-91	SCREW +BVTP 4X16
▲	4-365-268-01	SCREW (5) TAPPING



REF. NO.		PART NO.	DESCRIPTION	REMARK
1		X-4036-880-3	BEZNET ASSY	2-6
2		4-046-161-01	EMBLEM (NO.8), SONY	
3		4-068-307-04	BUTTON, MULTI	
4		4-068-308-01	GUIDE, LED	
5		4-068-309-04	BUTTON, FUNCTION	
6		4-068-306-03	DOOR	
7		4-057-714-01	PIECE ASSY, TLH CORRECTION	
8		1-416-864-12	COIL, VM	
9	*	4-064-883-03	HOLDER, DGC	
10		1-452-728-61	COIL, NA ROTATION (RT-154)	
11	⚠	8-738-823-05	CRT 21RSN(FOR EQUATORIAL AREA) (KV-21FV12C ONLY)	
11	⚠	8-738-822-05	CRT 21RSN(FOR NORTH AMERICA) (KV-20FV12/21FV12 ONLY)	
12		4-053-005-01	SPACER, DY	
13	⚠	8-451-505-31	DY Y21RSA-X	
14	*	A-1332-035-A	CB (VAR) MOUNTED PC BOARD	
15		A-1299-183-A	A COMPLETE PC BOARD** (KV20FV12 ONLY)	
15	*	A-1299-201-A	A COMPLETE PC BOARD** (KV-21FV12/C ONLY)	

**The high-voltage leads associated with the FBT on this board are not included and must be ordered separately. (See 29-31)

REF. NO.		PART NO.	DESCRIPTION	REMARK
16	*	4-375-394-01	SPRING, TENSION	
17	⚠	1-419-287-11	COIL, DEGAUSSING (KV-20FV12 ONLY)	
17	⚠	1-419-288-21	COIL, DEGAUSSING (KV-21FV12/C ONLY)	
18	*	A-1304-188-A	MB (VAR) MOUNTED PC BOARD	
19	*	A-1342-537-A	VB (VAR) MOUNTED PC BOARD	
20	⚠	1-790-316-21	CORD, AC POWER (WITH CONNECTOR) (KV-20FV12/21FV12 ONLY)	
20	⚠	1-769-796-31	CORD, POWER (WITH CONNECTOR) (KV-21FV12C ONLY)	
21	*	A-1380-627-A	K (VAR) MOUNTED PC BOARD	
22		1-766-374-11	PLUG, F-PIN	
23		1-529-472-11	SPEAKER (8CM) (KV-20FV12 ONLY)	
23		1-529-602-11	SPEAKER (8CM) (KV-21FV12/C ONLY)	
24		X-4036-947-1	SPEAKER DUCT ASSY	25
25		4-374-745-31	CUSHION (A)	
26		X-4036-935-1	SPEAKER BOX ASSY	
27		4-075-859-01	COVER, REAR	
28	⚠	1-453-316-21	FBT ASSY NX-1748//X4A4	29-31
29		1-251-642-52	HV CAP ASSY	
30		1-900-800-65	FOCUS LEAD	
31		1-900-803-22	G2 LEAD	
32		3-704-372-31	HOLDER, HV CABLE	
33		4-071-497-01	HOLDER, FBT	
34		4-062-047-01	PIECE A(110), CONV CORRECT	
35		1-452-032-00	MAGNET,DISC	
36	⚠	8-598-431-30	TUNER, FSS BTF-WA411	
37		1-500-586-11	FILTER CLAMP, FERRITE CORE (KV-20FV12 ONLY)	

Note:

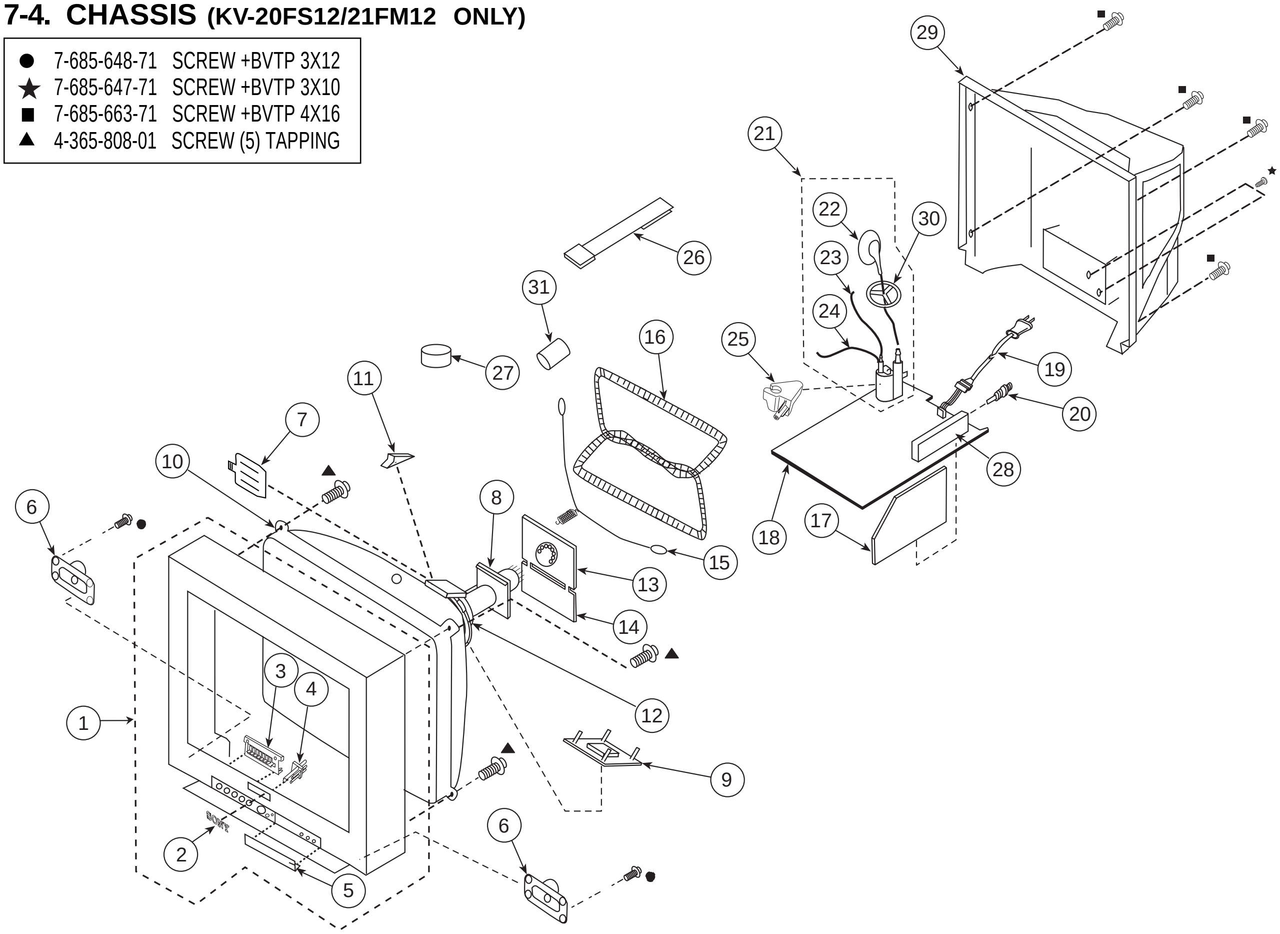
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

7-4. CHASSIS (KV-20FS12/21FM12 ONLY)

●	7-685-648-71	SCREW +BVTP 3X12
★	7-685-647-71	SCREW +BVTP 3X10
■	7-685-663-71	SCREW +BVTP 4X16
▲	4-365-808-01	SCREW (5) TAPPING



REF. NO.		PART NO.	DESCRIPTION	REMARK
1		X-4037-547-1	BEZNET ASSY (KV-21FM12 ONLY)	2-5
1		X-4037-392-1	BEZNET ASSY (KV-20FS12 ONLY)	2-5
2		4-046-161-01	EMBLEM (NO.8), SONY	
3		4-073-931-11	BUTTON, MULTI (KV-21FM12 ONLY)	
3		4-073-843-01	BUTTON, MULTI (KV-20FS12 ONLY)	
4		4-073-933-01	GUIDE, LED (KV-21FM12 ONLY)	
4		4-073-844-01	GUIDE, LED (KV-20FS12 ONLY)	
5		4-073-932-21	DOOR (KV-21FM12 ONLY)	
5		4-073-842-11	DOOR (KV-20FS12 ONLY)	
6		1-529-270-11	SPEAKER (9X5CM)	
7		4-057-714-01	PIECE ASSY, TLH CORRECTION	
8		1-416-864-12	COIL, VM	
9		1-452-728-61	COIL, NA ROTATION (RT-154)	
10	⚠	8-738-822-05	CRT 21RSN(FOR NORTH AMERICA)	
11		4-053-005-01	SPACER, DY	
12	⚠	8-451-505-31	DY Y21RSA-X	
13	*	A-1332-035-A	CB (VAR) MOUNTED PC BOARD	
14	*	A-1342-537-A	VB (VAR) MOUNTED PC BOARD	
15	*	4-375-394-01	SPRING, TENSION	
16	⚠	1-419-288-21	COIL, DEGAUSSING (KV-21FM12 ONLY)	
16	⚠	1-419-287-11	COIL, DEGAUSSING (KV-20FS12 ONLY)	
17	*	A-1304-201-A	MB (VAR) MOUNTED PC BOARD (KV-21FM12 ONLY)	
17	*	A-1304-183-A	MB (VAR) MOUNTED PC BOARD (KV-20FS12 ONLY)	
18		A-1299-182-A	A COMPLETE PC BOARD** (KV-20FS12 ONLY)	
18	*	A-1299-189-A	A COMPLETE PC BOARD** (KV-21FM12 ONLY)	
			**The high-voltage leads associated with the FBT on this board are not included and must be ordered separately. (See 22-24)	
19	⚠	1-790-316-21	CORD, AC POWER(WITH CONNECTOR)	
20		1-766-374-11	PLUG, F-PIN	
21	⚠	1-453-316-21	FBT ASSY NX-1748//X4A4	22-24
22		1-251-642-52	HV CAP ASSY	
23		1-900-800-65	FOCUS LEAD	
24		1-900-803-22	G2 LEAD	
25		4-071-497-01	HOLDER, FBT (KV-21FM12 ONLY)	
26		4-062-047-01	PIECE A(110), CONV CORRECT	
27		1-452-032-00	MAGNET,DISC	
28	⚠	8-598-501-00	TUNER, FSS BTF-FA402 (KV-21FM12 ONLY)	
28	⚠	8-598-431-30	TUNER, FSS BTF-WA411 (KV-20FS12 ONLY	
29		4-073-841-01	COVER, REAR (KV-20FS12 ONLY)	
29		4-073-934-01	COVER, REAR (KV-21FM12 ONLY)	
30		3-704-372-31	HOLDER, HV CABLE	
31		1-500-586-11	FILTER CLAMP, FERRITE CORE (KV-20FS12 ONLY)	

SECTION 8
ELECTRICAL PARTS LIST

Note:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

- The components identified by ⧓ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- Items marked * are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

A

RESISTORS
- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

REF. NO.	PART NO.	DESCRIPTION	REMARK

A

*	A-1299-174-A	A COMPLETE PC BOARD (KV-21FE12/C ONLY)	
*	A-1299-182-A	A COMPLETE PC BOARD (KV-20FS12 ONLY)	
*	A-1299-183-A	A COMPLETE PC BOARD (KV-20FV12 ONLY)	
*	A-1299-189-A	A COMPLETE PC BOARD (KV-21FM12 ONLY)	
*	A-1299-201-A	A COMPLETE PC BOARD (KV-21FV12/C ONLY)	
*	A-1299-204-A	A COMPLETE PC BOARD (KV-21FE12A ONLY)	

The high voltage leads associated with the FBT on this board are not included and must be ordered separately. Order the following leads when requesting this A Board:

	1-251-642-52	HV CAP ASSY
	1-900-800-65	FOCUS LEAD
	1-900-803-22	G2 LEAD
	1-533-223-11	HOLDER, FUSE
*	4-374-846-11	COVER, CAPACITOR, CAP TYPE
	4-382-854-11	SCREW (M3X10), P, SW (+)
	4-382-854-11	SCREW (M3X10), P, SW (+)

CAPACITOR

REF. NO.		PART NO.	DESCRIPTION			REMARK
C100		1-164-346-11	CERAMIC CHIP	1µF		16V
C101		1-164-346-11	CERAMIC CHIP	1µF		16V
C102		1-126-933-11	ELECT	100µF	20%	16V
C104		1-126-941-11	ELECT	470µF	20%	25V
C105		1-104-664-11	ELECT	47µF	20%	25V
C204		1-163-017-00	CERAMIC CHIP	0.0047µF	10%	50V
C205		1-126-963-11	ELECT	4.7µF	20%	50V
C207		1-126-963-11	ELECT	4.7µF	20%	50V
			(KV-20FS12/21FM12/21FE12A ONLY)			
C208		1-126-963-11	ELECT	4.7µF	20%	50V
			(ALL EXCEPT KV-20FV12/21FV12/C)			
C210		1-126-963-11	ELECT	4.7µF	20%	50V
			(ALL EXCEPT KV-21FM12)			
C214		1-164-346-11	CERAMIC CHIP	1µF		16V
C215		1-164-346-11	CERAMIC CHIP	1µF		16V
			(ALL EXCEPT KV-21FM12)			
C216		1-126-963-11	ELECT	4.7µF	20%	50V
C219		1-126-964-11	ELECT	10µF	20%	50V
C401		1-126-968-11	ELECT	100µF	20%	50V
			(KV-21FV12/C ONLY)			
C402		1-126-943-11	ELECT	2200µF	20%	25V
C403		1-126-957-11	ELECT	0.22µF	20%	50V
C420		1-164-222-11	CERAMIC CHIP	0.22µF		25V
C421		1-164-222-11	CERAMIC CHIP	0.22µF		25V
			(ALL EXCEPT KV-21FM12)			
C435		1-164-222-11	CERAMIC CHIP	0.22UF		25V
			(KV-21FV12/C ONLY)			
C438		1-126-940-11	ELECT	330µF	20%	25V
C439		1-126-940-11	ELECT	330µF	20%	25V
C440		1-126-963-11	ELECT	4.7µF	20%	50V
			(ALL EXCEPT KV-20FV12/21FV12/C)			
C441		1-164-346-11	CERAMIC CHIP	1µF		16V
C442		1-126-963-11	ELECT	4.7µF	20%	50V
C443		1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
			(ALL EXCEPT KV-20FV12/21FV12/C)			
C444		1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
			(ALL EXCEPT KV-20FV12/21FV12/C)			
C445		1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
			(ALL EXCEPT KV-20FV12/21FV12/C)			
C446		1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
			(KV-20FS12/21FE12/A/C ONLY)			
C450		1-165-320-11	CERAMIC CHIP	0.47µF	10%	16V
C501		1-102-112-00	CERAMIC	330PF	10%	50V
C502		1-106-383-00	MYLAR	0.047µF	10%	200V
C503		1-102-212-00	CERAMIC	820PF	10%	500V
C504		1-102-002-00	CERAMIC	680PF	10%	500V
C505	⚠	1-162-134-11	CERAMIC	470PF	10%	2KV
C506		1-162-318-11	CERAMIC	0.001µF	10%	500V
C507	⚠	1-117-642-11	FILM	8200PF	3%	1.2KV
C508		1-137-150-11	MYLAR	0.01µF	10%	100V

Note:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

A

REF.NO.		PART NO.	DESCRIPTION	REMARK		
C509	⚠	1-162-116-00	CERAMIC	680PF	10%	2KV
C510		1-107-651-11	ELECT	4.7µF	20%	250V
C511	⚠	1-115-519-11	FILM	0.56µF	5%	250V
C512	⚠	1-106-383-00	MYLAR	0.047µF	10%	200V
C513		1-106-343-00	MYLAR	0.001µF	10%	100V
C514	⚠	1-115-521-11	FILM	0.82µF	5%	250V
C515	⚠	1-162-116-00	CERAMIC	680PF	10%	2KV
C516		1-117-214-11	CERAMIC	0.001µF	10%	2KV
C520	⚠	1-129-722-00	FILM	0.047µF	5%	630V
C521		1-164-646-11	CERAMIC	2200PF	10%	500V
C523		1-126-941-11	ELECT	470µF	20%	25V
C524		1-102-244-00	CERAMIC	220PF	10%	500V
C525		1-162-815-11	CERAMIC	47PF	5%	500V
C526		1-126-960-11	ELECT	1µF	20%	50V
C527		1-126-965-11	ELECT	22µF	20%	50V
C528		1-164-161-11	CERAMIC CHIP	0.0022µF	10%	50V
C529		1-164-161-11	CERAMIC CHIP	0.0022µF	10%	50V
C530		1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C531		1-106-387-00	MYLAR	0.068µF	10%	200V
C533		1-126-941-11	ELECT	470µF	20%	25V
C534	⚠	1-126-964-11	ELECT	10µF	20%	50V
C535		1-126-959-11	ELECT	0.47µF	20%	50V
C537	⚠	1-126-963-11	ELECT	4.7µF	20%	50V
C539		1-107-645-11	ELECT	22µF	20%	160V
C540		1-107-645-11	ELECT	22µF	20%	160V
C541		1-126-969-11	ELECT	220µF	20%	50V
C542		1-126-967-11	ELECT	47µF	20%	50V
C543		1-137-194-81	MYLAR	0.47µF	5%	50V
C546	⚠	1-107-635-11	ELECT	4.7µF	20%	160V
C547	⚠	1-163-031-11	CERAMIC CHIP	0.01µF		50V
C548		1-123-024-21	ELECT	33µF		160V
C549	⚠	1-126-934-11	ELECT	220µF	20%	16V
C551	⚠	1-137-417-11	MYLAR	0.0047µF	10%	200V
C553		1-107-662-11	ELECT	22µF	20%	250V
C557		1-163-038-91	CERAMIC CHIP	0.1µF		25V
C601		1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C602		1-126-967-11	ELECT	47µF	20%	50V
C604		1-164-182-11	CERAMIC CHIP	0.0033µF	10%	50V
C606	⚠	1-113-923-11	CERAMIC	0.0033µF	20%	250V
C607		1-136-311-51	MYLAR	0.47µF	20%	125V
			(KV-20FS12/20FV12 ONLY)			
C607		1-136-311-61	MYLAR	0.47µF	20%	300V
C611	⚠	1-113-923-11	CERAMIC	0.0033µF	20%	250V
C612	⚠	1-117-893-11	ELECT	470µF	20%	250V
			(KV-20FS12/20FV12 ONLY)			
C612	⚠	1-128-714-11	ELECT	330µF	20%	400V
C617		1-125-893-11	FILM	680PF	3%	1.5KV
C618		1-164-081-11	CERAMIC	470PF	10%	50V
C619		1-136-356-11	MYLAR	470PF	5%	50V
C620		1-104-665-11	ELECT	100µF	20%	25V
C621		1-117-214-11	CERAMIC	0.001µF	10%	2KV
C622		1-164-625-11	CERAMIC	680PF	10%	500V
C623		1-164-625-11	CERAMIC	680PF	10%	500V
C624		1-131-867-51	ELECT	100µF		160V
C625		1-135-412-51	ELECT	1000µF	20%	25V
C625		1-135-573-51	ELECT	15000µF	20%	25V
			(KV-21FV12/C ONLY)			
C626		1-135-412-51	ELECT	1000µF	20%	25V
C627		1-136-189-00	MYLAR	0.1µF	10%	250V
C628		1-104-665-11	ELECT	100µF	20%	25V
C630		1-113-924-11	CERAMIC	0.0047µF	20%	250V
			(KV-20FS12/20FV12 ONLY)			
C631		1-113-924-11	CERAMIC	0.0047µF	20%	250V
			(KV-20FS12/20FV12 ONLY)			C634
		1-137-605-11	MYLAR	0.01µF	10%	250V
C635		1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C636		1-126-970-11	ELECT	330µF	20%	50V
C637		1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C638		1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C639		1-126-965-11	ELECT	22µF	20%	50V
C641		1-107-679-91	ELECT	10µF	20%	450V
C643		1-104-760-11	CERAMIC CHIP	0.047µF	10%	50V
C644		1-161-964-91	CERAMIC	0.0047µF		250V
C645		1-161-964-91	CERAMIC	0.0047µF		250V
C646		1-161-964-91	CERAMIC	0.0047µF		250V
C647		1-161-964-91	CERAMIC	0.0047µF		250V
C648		1-136-346-51	MYLAR	0.22µF	20%	125V
			(KV-20FS12/20FV12 ONLY)			
C648		1-136-346-61	MYLAR	0.22µF	20%	300V
C652		1-130-471-00	MYLAR	0.001µF	5%	50V
C654		1-107-636-11	ELECT	10µF	20%	160V
C655	⚠	1-136-311-51	MYLAR	0.47µF	20%	125V
			(KV-20FS12/20FV12 ONLY)			
C655	⚠	1-136-311-61	MYLAR	0.47µF	20%	300V
C657		1-104-664-11	ELECT	47µF	20%	25V
C658		1-135-412-51	ELECT	1000µF	20%	25V
C658		1-135-573-51	ELECT	15000µF	20%	25V
			(KV-21FV12/C ONLY)			
C699		1-117-703-11	CERAMIC	0.0047µF	20%	250V
C2001		1-104-664-11	ELECT	47µF	20%	25V

CONNECTOR

REF.NO.		PART NO.	DESCRIPTION
CN403	*	1-564-505-11	PLUG, CONNECTOR 2P
			(ALL EXCEPT KV-20FV12/21FV12/C)
CN404	*	1-564-505-11	PLUG, CONNECTOR 2P
			(ALL EXCEPT KV-20FV12/21FV12/C)
CN406	*	1-564-507-11	PLUG, CONNECTOR 4P
CN460		1-573-298-21	CONNECTOR, BOARD TO BOARD 20P
			(KV-20FV12/21FV12/C ONLY)
CN501	*	1-580-798-11	CONNECTOR PIN (DY) 6P

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REF.NO.	PART NO.	DESCRIPTION	REMARK
CN502 *	1-564-509-11	PLUG, CONNECTOR 6P	
CN506 *	1-564-508-11	PLUG, CONNECTOR 5P	
CN601 *	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
CN602 * ⚠	1-580-843-11	PIN, CONNECTOR (POWER)	
CN2001*	1-564-511-11	PLUG, CONNECTOR 8P	
CN2002	1-573-298-21	CONNECTOR, BOARD TO BOARD 20P	
CN2009	1-573-298-21	CONNECTOR, BOARD TO BOARD 20P	
	DIODE		
D204	8-719-982-22	DIODE MTZJ-T-77-30D	
D208	8-719-110-17	DIODE MTZJ-T-77-10B	
D209	8-719-110-17	DIODE MTZJ-T-77-10B	
D210	8-719-110-17	DIODE MTZJ-T-77-10B	
D212	8-719-110-17	DIODE MTZJ-T-77-10B	
D213	8-719-110-17	DIODE MTZJ-T-77-10B	
D230	8-719-108-12	DIODE RD9.1EW-T1 (KV-20FV12/21FV12/C ONLY)	
D231	8-719-108-12	DIODE RD9.1EW-T1 (KV-20FV12/21FV12/C ONLY)	
D400	8-719-108-12	DIODE RD9.1EW-T1	
D401	8-719-110-08	DIODE MTZJ-T-77-8.2B	
D403	8-719-073-01	DIODE MA111-TX (ALL EXCEPT KV-20FV12/21FV12/C)	
D502	8-719-908-03	DIODE GP08DPKG23	
D503	8-719-908-03	DIODE GP08DPKG23	
D504 ⚠	8-719-945-80	DIODE ERC06-15S	
D505 ⚠	8-719-979-85	DIODE RGP15GPKG23	
D506	8-719-302-43	DIODE RGP10GPKG3	
D507 ⚠	8-719-991-33	DIODE 1SS133T-77	
D508	8-719-991-33	DIODE 1SS133T-77	
D509	8-719-921-44	DIODE MTZJ-T-77-5.1C	
D510	8-719-908-03	DIODE GP08DPKG23	
D511	8-719-302-43	DIODE RGP10GPKG23	
D513	8-719-979-85	DIODE RGP15GPKG23	
D514	8-719-979-85	DIODE RGP15GPKG23	
D516 ⚠	8-719-991-33	DIODE 1SS133T-77	
D517 ⚠	8-719-991-33	DIODE 1SS133T-77	
D518 ⚠	8-719-110-08	DIODE RD8.2ES-T1B	
D519 ⚠	8-719-302-43	DIODE EL1Z-V1	
D520 ⚠	8-719-073-01	DIODE MA111-TX	
D601	8-719-991-33	DIODE 1SS133T-77	
D602	8-719-991-33	DIODE 1SS133T-77	
D605 ⚠	8-719-510-53	DIODE D4SB60L-F	
D610	8-719-510-02	DIODE D1NS4-TA	
D611	8-719-063-70	DIODE D1NL20U-TA	
D612	8-719-110-17	DIODE MTZJ-T-77-10B	
D613	8-719-063-70	DIODE D1NL20U-TA	

REF.NO.	PART NO.	DESCRIPTION	REMARK
D614	8-719-063-70	DIODE D1NL20U-TA	
D615	8-719-312-10	DIODE RU4AM-T3	
D616	8-719-510-37	DIODE D5LC20U	
D617	8-719-110-31	DIODE MTZJ-T-77-12C	
D618	8-719-991-33	DIODE 1SS133T-77	
D619	8-719-110-17	DIODE MTZJ-T-77-10B	
D620	8-719-510-37	DIODE D5LC20U	
D622 ⚠	8-719-077-76	DIODE D2SB60A-F04	
D623	8-719-948-45	DIODE ERA22-08TP3	
D624	8-719-991-33	DIODE 1SS133T-77	
D625	8-719-991-33	DIODE 1SS133T-77	
D626	8-719-063-70	DIODE D1NL20U-TA	
D627	8-719-110-03	DIODE MTZJ-T-77-7.5A	
D628	8-719-510-48	DIODE D1N20R-TA	
D2001	8-719-070-80	DIODE LNK0120022G (KV-20FS12/21FM12/21FE12/C ONLY)	
D2001	8-719-074-84	DIODE LNK0120022G1 (KV-20FV12/21FV12/C ONLY)	
D2001	8-719-078-12	DIODE LNK0220022G2 (KV-21FE12A ONLY)	
D2002	8-719-110-17	DIODE MTZJ-T-77-10B	
D2003	8-719-108-12	DIODE RD9.1EW-T1	
D2004	8-719-921-44	DIODE MTZJ-T-77-5.1C	
D2005	8-719-921-44	DIODE MTZJ-T-77-5.1C	
	FUSE		
F601 ⚠	1-576-193-11	FUSE 6.3A/125V (KV-20FS12/20FV12 ONLY)	
F601 ⚠	1-532-506-51	FUSE 6.3A/250V	
	FERRITE BEAD		
FB501	1-410-397-21	FERRITE	1.1µH
FB502	1-410-397-21	FERRITE	1.1µH
FB503	1-410-397-21	FERRITE	1.1µH
FB600	1-412-911-11	FERRITE	0µH
FB601	1-412-911-11	FERRITE	0µH
FB602	1-412-911-11	FERRITE	0µH
FB603	1-412-911-11	FERRITE	0µH
FB604	1-412-911-11	FERRITE	0µH
FB605	1-412-911-11	FERRITE	0µH
FB606	1-412-911-11	FERRITE	0µH
FB609	1-412-911-11	FERRITE	0µH
FB610	1-412-911-11	FERRITE	0µH
	IC		
IC401	8-759-490-17	IC TDA7057AQ/N2 (ALL EXCEPT KV-21FV12/C)	
IC402	8-759-573-40	IC TDA8580Q/N1 (KV-21FV12/C ONLY)	

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REF.NO.	PART NO.	DESCRIPTION	REMARK
IC405	8-759-450-93	IC NJM2521M-TE1 (ALL EXCEPT KV-20FV12/21FV12/C)	
IC406	8-759-450-93	IC NJM2521M-TE1 (KV-20FS12/21FE12/A/C ONLY)	
IC501 ⚠	8-759-700-07	IC NJM2903M-TE2	
IC502	8-759-980-58	IC TDA8172	
IC601 ⚠	8-749-015-60	IC STR-F6624 (KV-20FS12/20FV12 ONLY)	
IC601 ⚠	8-749-013-75	IC STR-F6654	
IC602 ⚠	8-749-016-47	IC EA135-F12	
IC603	8-759-198-03	IC PQ09RF21	
IC604	8-759-701-75	IC NJM7805FA	
IC2001	8-742-134-00	HYB IC SBX1981-51P	

JACK

REF.NO.	PART NO.	DESCRIPTION	REMARK
J201	1-794-118-11	JACK BLOCK, PIN 3P (KV-20FS12/21FE12/A/C ONLY)	
J201	1-794-119-11	TERMINAL BLOCK, S 4P (KV-20FV12/21FV12/C ONLY)	
J201	1-794-115-11	JACK BLOCK, PIN 2P (KV-21FM12 ONLY)	
J202	1-794-267-11	JACK, PIN 3P	
J202	1-794-266-21	JACK, PIN 2P (KV-21FM12 ONLY)	
J205	1-794-116-11	JACK BLOCK, PIN 2P (KV-20FV12/21FV12/C ONLY)	
J401	1-568-267-21	JACK	

CHIP CONDUCTOR

REF.NO.	PART NO.	DESCRIPTION	REMARK
JR001	1-216-295-91	SHORT	
JR002	1-216-295-91	SHORT	
JR202	1-216-295-91	SHORT (KV-20FS12/21FE12/A/C ONLY)	
JR403	1-216-295-91	SHORT	
JR405	1-216-295-91	SHORT (KV-21FV12/C ONLY)	
JR409	1-216-295-91	SHORT (KV-20FS12/21FE12/A/C ONLY)	
JR411	1-216-295-91	SHORT (KV-20FV12/21FV12/C ONLY)	
JR412	1-216-295-91	SHORT (KV-20FS12/21FE12/A/C ONLY)	
JR430	1-216-295-91	SHORT	
JR470	1-216-295-91	SHORT (KV-21FM12 ONLY)	
JR471	1-216-295-91	SHORT (KV-21FV12/C ONLY)	
JR503	1-216-295-91	SHORT	
JR505	1-216-295-91	SHORT (ALL EXCEPT KV-21FV12/C)	

COIL

REF.NO.	PART NO.	DESCRIPTION	REMARK
L101	1-414-267-11	INDUCTOR	10µH
L102	1-414-273-11	INDUCTOR	100µH
L103	1-414-267-11	INDUCTOR	10µH
L501 ⚠	1-409-955-11	INDUCTOR	8mH
L502	1-412-552-11	INDUCTOR	2.2mH
L503	1-406-677-11	INDUCTOR	10mH
L504	1-412-533-21	INDUCTOR	47µH
L508 ⚠	1-406-981-21	INDUCTOR	470µH
L510 ⚠	1-412-528-11	INDUCTOR	18µH
L603	1-412-529-11	INDUCTOR	22µH
L604	1-412-525-31	INDUCTOR	10µH
L605	1-412-529-11	INDUCTOR	22µH

PHOTO COUPLER

REF.NO.	PART NO.	DESCRIPTION	REMARK
PH601 ⚠	8-749-010-64	PHOTO COUPLER PC123FY2	

IC LINK

REF.NO.	PART NO.	DESCRIPTION	REMARK
PS401 ⚠	1-576-336-21	LINK, IC	
PS401 ⚠	1-532-686-21	LINK, IC 2.7A/150V (KV-21FV12 / 21FV12C ONLY)	

TRANSISTOR

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q101	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q410	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX (KV-20FV12 /21FV12 /21FV12C ONLY)	
Q411	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q501	8-729-140-50	TRANSISTOR 2SC3209LK-TP	
Q502 ⚠	8-729-051-69	TRANSISTOR 2SD2624	
Q503 ⚠	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q503 ⚠	8-729-120-28	TRANSISTOR 2SC2412K-T-146-QR (KV-21FM12 ONLY)	
Q504	8-729-809-29	TRANSISTOR 2SC4159-E	
Q505 ⚠	8-729-200-17	TRANSISTOR 2SA1091O-TPE2	
Q506 ⚠	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q506 ⚠	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX (KV-21FV12/C ONLY)	
Q507 ⚠	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q604	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q605 ⚠	8-729-046-40	TRANSISTOR 2SK2663	
Q606	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q607	8-729-922-37	TRANSISTOR 2SD2144S-TP-UVW	
Q608	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q609	8-729-423-33	TRANSISTOR 2SC3311A-QRSTA	

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REF.NO.	PART NO.	DESCRIPTION			REMARK
	RESISTOR				
R101	1-216-073-00	RES-CHIP	10K	5%	1/10W
R103	1-216-295-91	SHORT	0		
		(KV-21FM12 ONLY)			
R105	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R107	1-216-025-91	RES-CHIP	100	5%	1/10W
R108	1-216-025-91	RES-CHIP	100	5%	1/10W
R114	1-216-295-91	SHORT	0		
		(KV-21FM12 ONLY)			
R115	1-216-295-91	SHORT	0		
		(ALL EXCEPT KV-21FM12)			
R204	1-216-083-00	RES-CHIP	27K	5%	1/10W
R205	1-216-689-11	RES-CHIP	39K	5%	1/10W
R206	1-216-295-91	SHORT	0		
		(KV-21FM12 ONLY)			
R208	1-215-899-11	METAL OXIDE	15K	5%	2W
R214	1-216-113-00	RES-CHIP	470K	5%	1/10W
		(ALL EXCEPT KV-21FM12)			
R215	1-216-113-00	RES-CHIP	470K	5%	1/10W
R235	1-216-089-91	RES-CHIP	47K	5%	1/10W
R237	1-216-033-00	RES-CHIP	220	5%	1/10W
R238	1-216-033-00	RES-CHIP	220	5%	1/10W
R239	1-216-089-91	RES-CHIP	47K	5%	1/10W
R401	1-216-080-00	RES-CHIP	20K	5%	1/10W
		(KV-21FV12/C ONLY)			
R402	1-216-073-00	RES-CHIP	10K	5%	1/10W
		(KV-21FV12/C ONLY)			
R409	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
		(KV-21FM12 ONLY)			
R421	1-249-425-11	CARBON	4.7K	5%	1/4W
R422	1-249-389-11	CARBON	4.7	5%	1/4W
R424	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
		(ALL EXCEPT KV-20FV12/21FV12/C)			
R425	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
		(ALL EXCEPT KV20FV12/21FM12/21FV12/C)			
R425	1-216-295-91	SHORT	0		
		(KV-21FM12 ONLY)			
R426	1-216-009-91	RES-CHIP	22	5%	1/10W
		(KV-21FV12/C ONLY)			
R427	1-247-815-91	CARBON	220	5%	1/4W
R428	1-216-033-00	RES-CHIP	220	5%	1/10W
R429	1-216-113-00	RES-CHIP	470K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R430	1-216-049-91	RES-CHIP	1K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R431	1-216-049-91	RES-CHIP	1K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R432	1-216-073-00	RES-CHIP	10K	5%	1/10W
R432	1-216-085-00	RES-CHIP	33K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			

REF.NO.		PART NO.	DESCRIPTION			REMARK
R433		1-216-113-00	RES-CHIP	470K	5%	1/10W
			(KV-20FV12/21FV12/C ONLY)			
R436		1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R436		1-216-073-00	RES-CHIP	10K	5%	1/10W
			(KV-20FV12/21FV12/C ONLY)			
R437		1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R437		1-216-073-00	RES-CHIP	10K	5%	1/10W
			(KV-20FV12/21FV12/C ONLY)			
R438		1-216-065-91	RES-CHIP	4.7K	5%	1/10W
			(KV-20FS12/21FE12/A/C ONLY)			
R438		1-216-073-00	RES-CHIP	10K	5%	1/10W
			(KV-20FV12/21FV12/C ONLY)			
R439		1-216-065-91	RES-CHIP	4.7K	5%	1/10W
			(KV-20FS12/21FE12A ONLY)			
R439		1-216-073-00	RES-CHIP	10K	5%	1/10W
			(KV-20FV12/21FV12/C ONLY)			
R439		1-216-089-91	RES-CHIP	47K	5%	1/10W
			(KV-21FM12.21FE12/C ONLY)			
R440		1-216-097-91	RES-CHIP	100K	5%	1/10W
R441		1-216-081-00	RES-CHIP	22K	5%	1/10W
			(KV-21FV12/C ONLY)			
R442		1-216-025-91	RES-CHIP	100	5%	1/10W
			(KV-21FV12/C ONLY)			
R443		1-216-033-00	RES-CHIP	220	5%	1/10W
			(ALL EXCEP KV-20FV12/21FV12/C)			
R444		1-216-033-00	RES-CHIP	220	5%	1/10W
			(ALL EXCEP KV-20FV12/21FV12/C)			
R445		1-216-073-00	RES-CHIP	10K	5%	1/10W
R446		1-249-435-11	CARBON	33K	5%	1/4W
			(KV-20FV12/21FV12/C ONLY)			
R447		1-216-049-91	RES-CHIP	1K	5%	1/10W
R454		1-216-025-91	RES-CHIP	100	5%	1/10W
R501		1-247-843-11	CARBON	3.3K	5%	1/4W
R502	⚠	1-215-892-11	METAL OXIDE	1K	5%	2W
R503	⚠	1-249-426-11	CARBON	5.6K	5%	1/4W
R506	⚠	1-215-886-11	METAL OXIDE	100	5%	2W
R507	⚠	1-260-320-11	CARBON	220	5%	1/2W
R508		1-247-863-91	CARBON	22K	5%	1/4W
R509	⚠	1-215-892-11	METAL OXIDE	1K	5%	2W
R510		1-249-411-11	CARBON	330	5%	1/4W
R513	⚠	1-215-913-11	METAL OXIDE	220	5%	3W
R516		1-249-429-11	CARBON	10K	5%	1/4W
R517		1-249-425-11	CARBON	4.7K	5%	1/4W
R518		1-249-427-11	CARBON	6.8K	5%	1/4W
R519		1-249-427-11	CARBON	6.8K	5%	1/4W
R520	⚠	1-215-861-00	METAL OXIDE	47	5%	1W
R521		1-249-411-11	CARBON	330	5%	1/4W
R522		1-249-415-11	CARBON	680	5%	1/4W
R523		1-216-073-00	RES-CHIP	10K	5%	1/10W
R524		1-249-429-11	CARBON	10K	5%	1/4W
R525	⚠	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R526		1-208-814-91	METAL CHIP	22K	0.50%	1/10W

Note:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

The components identified by ⧓ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding x-ray radiation. Should replacement be required, replace only with the value originally used.

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REF.NO.		PART NO.	DESCRIPTION		REMARK	
R527		1-216-081-00	RES-CHIP	22K	5%	1/10W
R528		1-249-421-11	CARBON	2.2K	5%	1/4W
R529		1-216-105-91	RES-CHIP	220K	5%	1/10W
R530		1-216-101-00	RES-CHIP	150K	5%	1/10W
R531		1-216-085-00	RES-CHIP	33K	5%	1/10W
R532		1-215-431-00	METAL	2.7K	1%	1/4W
R533		1-215-461-00	METAL	47K	1%	1/4W
R534		1-215-455-00	METAL	27K	1%	1/4W
R535		1-249-441-11	CARBON	100K	5%	1/4W
R536	⚠	1-216-355-11	METAL OXIDE	3.3	5%	1W
R538	⚠	1-215-890-11	METAL OXIDE	470	5%	2W
R539		1-249-385-11	CARBON	2.2	5%	1/4W
R540		1-249-425-11	CARBON	4.7K	5%	1/4W
R541		1-249-429-11	CARBON	10K	5%	1/4W
R542	⚠	1-215-910-00	METAL OXIDE	68	5%	3W
R543		1-247-887-00	CARBON	220K	5%	1/4W
R544		1-260-312-11	CARBON	47	5%	1/2W
R546	⚠	1-249-377-11	CARBON	0.47	5%	1/4W
R547	⚠	1-215-892-11	METAL OXIDE	1K	5%	2W
R549	⚠	1-260-288-11	CARBON	0.47	5%	1/2W
R550	⚠	1-260-288-11	CARBON	0.47	5%	1/2W
R552	⚠	1-215-910-00	METAL OXIDE	68	5%	3W
R553	⚠	1-216-365-00	METAL OXIDE	0.47	5%	2W
R554	⚠	1-249-429-11	CARBON	10K	5%	1/4W
R555	⚠	1-247-895-91	CARBON	470K	5%	1/4W
R556	⚠	1-249-416-11	CARBON	820	5%	1/4W
R557	⚠	1-247-895-91	CARBON	470K	5%	1/4W
R558	⚠	1-249-441-11	CARBON	100K	5%	1/4W
R559	⚠	1-249-429-11	CARBON	10K	5%	1/4W
R560	⚠	1-215-902-11	METAL OXIDE	47K	5%	1W
R561	⚠	1-215-416-00	METAL	620	1%	1/4W
⧓ R562	⚠	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
R563	⚠	1-249-441-11	CARBON	100K	5%	1/4W
R565	⚠	1-249-429-11	CARBON	10K	5%	1/4W
R566	⚠	1-216-073-00	RES-CHIP	10K	5%	1/10W
R567	⚠	1-216-073-00	RES-CHIP	10K	5%	1/10W
R568	⚠	1-215-882-00	METAL OXIDE	22	5%	2W
R571		1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R572		1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R573		1-216-109-00	RES-CHIP	330K	5%	1/10W
R601	⚠	1-219-513-11	CARBON	4.7M	5%	1/2W
			(KV-20FS12/20FV12 ONLY)			
R602	⚠	1-249-389-11	CARBON	4.7	5%	1/4W
R603		1-215-485-00	METAL	470K	1%	1/4W
R605	⚠	1-205-998-11	CEMENTED	1	5%	10W
			(KV-20FS12/20FV12 ONLY)			
R605	⚠	1-202-968-11	CEMENTED	1.2	5%	10W
R606		1-205-998-11	CEMENTED	1	5%	10W
			(KV-20FS12/20FV12 ONLY)			
R606		1-202-968-11	CEMENTED	1.2	5%	10W

REF.NO.		PART NO.	DESCRIPTION		REMARK	
R607		1-215-859-00	METAL OXIDE	22	5%	1W
R608		1-240-205-11	CARBON	22M	5%	1/2W
R609		1-216-049-91	RES-CHIP	1K	5%	1/10W
R610		1-216-073-00	RES-CHIP	10K	5%	1/10W
R611		1-216-089-91	RES-CHIP	47K	5%	1/10W
R612		1-216-045-00	RES-CHIP	680	5%	1/10W
R613	⚠	1-219-512-11	CARBON	2.2M	5%	1/2W
R614		1-249-413-11	CARBON	470	5%	1/4W
R615	⚠	1-218-265-11	METAL	8.2M	5%	1W
			(ALL EXCEPT KV-20FS12/20FV12)			
R616	⚠	1-260-302-51	CARBON	6.8	5%	1/2W
R617		1-216-009-91	RES-CHIP	22	5%	1/10W
R621		1-202-968-11	CEMENTED	1.2	5%	10W
			(ALL EXCEPT KV-20FS12/20FV12)			
R626	⚠	1-220-926-11	FUSIBLE	0.47	10%	1/2W
R627		1-215-483-00	METAL	390K	1%	1/4W
			(KV-20FS12/20FV12 ONLY)			
R627		1-215-479-00	METAL	270K	1%	1/4W
R630		1-249-421-11	CARBON	2.2K	5%	1/4W
R632	⚠	1-216-361-21	METAL OXIDE	0.22	5%	2W
R633		1-249-415-11	CARBON	680	5%	1/4W
R634		1-216-073-00	RES-CHIP	10K	5%	1/10W
R635		1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R637		1-216-485-11	METAL OXIDE	5.6K	5%	3W
			(ALL EXCEPT KV-20FS12/20FV12)			
R638		1-249-399-11	CARBON	33	5%	1/4W
			(KV-20FS12/20FV12 ONLY)			
R638		1-249-402-11	CARBON	56	5%	1/4W
R639		1-249-421-11	CARBON	2.2K	5%	1/4W
R640		1-249-417-11	CARBON	1K	5%	1/4W
R641	⚠	1-216-363-00	METAL OXIDE	0.33	5%	2W
R642		1-216-089-91	RES-CHIP	47K	5%	1/10W
R643		1-249-419-11	CARBON	1.5K	5%	1/4W
R644		1-247-843-11	CARBON	3.3K	5%	1/4W
R645		1-215-898-11	METAL OXIDE	10K	5%	2W
R646		1-249-419-11	CARBON	1.5K	5%	1/4W
R648		1-215-908-00	METAL OXIDE	33	5%	3W
R650		1-216-387-11	METAL OXIDE	0.68	5%	3W
R653		1-216-049-91	RES-CHIP	1K	5%	1/10W
R655		1-216-049-91	RES-CHIP	1K	5%	1/10W
R656		1-249-429-11	CARBON	10K	5%	1/4W
R658		1-216-387-11	METAL OXIDE	0.68	5%	3W
R659		1-215-857-11	METAL OXIDE	10	5%	1W
R660		1-215-924-00	METAL OXIDE	15K	5%	3W
			(KV-20FS12/20FV12 ONLY)			
R660		1-216-485-11	METAL OXIDE	5.6K	5%	3W
R661		1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R662	⚠	1-216-485-11	METAL OXIDE	5.6K	5%	3W
			(ALL EXCEPT KV-20FS12/20FV12)			
R663		1-216-081-00	RES-CHIP	22K	5%	1/10W

A CB

Note:

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Note:

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REF.NO.	PART NO.	DESCRIPTION			REMARK
R2001	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R2002	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R2003	1-249-425-11	CARBON	4.7K	5%	1/4W
R2004	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R2005	1-216-295-91	SHORT (ALL EXCEPT KV-20FV12/21FV12/C)			
R2007	1-249-413-11	CARBON (KV-21FE12A ONLY)	470	5%	1/4W
R2011	1-249-415-11	CARBON	680	5%	1/4W
R2012	1-249-416-11	CARBON	820	5%	1/4W
R2013	1-249-421-11	CARBON	2.2K	5%	1/4W
R2014	1-249-427-11	CARBON	6.8K	5%	1/4W

RELAY

RY601 ⚠	1-755-198-11	RELAY
RY602 ⚠	1-755-266-11	RELAY, AC POWER

SWITCH

S2001	1-692-431-21	SWITCH, TACTILE
S2002	1-692-431-21	SWITCH, TACTILE
S2003	1-692-431-21	SWITCH, TACTILE
S2004	1-692-431-21	SWITCH, TACTILE
S2005	1-692-431-21	SWITCH, TACTILE
S2006	1-692-431-21	SWITCH, TACTILE
S2007	1-762-816-11	SWITCH, TACTILE
S2008	1-762-816-11	SWITCH, TACTILE

SWITCH

SW502	1-572-707-11	SWITCH, LEVER

TRANSFORMER

T501 ⚠	1-435-374-11	TRANSFORMER, FERRITE (HDT)
T504 ⚠	1-435-079-11	TRANSFORMER, HORIZONTAL LINEAR
T505 ⚠	1-453-316-21	FBT ASSY NX-1748//X4A4
T602 ⚠	1-431-419-11	TRANSFORMER, LINE FILTER (KV-20FS12/20FV12 ONLY)
T602 ⚠	1-426-717-11	TRANSFORMER, LINE FILTER (LFT)
T603 ⚠	1-433-806-11	TRANSFORMER, REGULAT (KV-20FS12/20FV12 ONLY)
T603 ⚠	1-433-807-11	TRANSFORMER, REGULAT
T604 ⚠	1-431-852-11	TRANSFORMER, CONVERTER (SRT)

THERMISTOR

TH601 ⚠	1-803-586-11	THERMISTOR, NTC

THERMISTOR

REF.NO.	PART NO.	DESCRIPTION
THP601⚠	1-809-539-11	THERMISTOR, POSITIVE (KV-20FS12/20FV12 ONLY)
THP601⚠	1-803-540-11	THERMISTOR

TUNER

TU101 ⚠	8-598-542-00	TUNER, FSS BTF-WA412 (KV-21FE12A ONLY)
TU101 ⚠	8-598-431-30	TUNER, FSS BTF-WA411 (ALL EXCEPT KV-21FM12/21FE12A)
TU101 ⚠	8-598-501-00	TUNER, FSS BTF-FA402 (KV-21FM12 ONLY)

VARISTOR

VDR601 ⚠	1-803-585-11	VARISTOR ENE271D-10A (KV-20FS12/20FV12 ONLY)
VDR601 ⚠	1-803-967-11	VARISTOR (ENE621D-14A)

CB

*	**A-1332-035-A**	**CB (VAR) MOUNTED PC BOARD**
	4-382-854-11	SCREW (M3X10), P, SW (+)

CAPACITOR

C701	1-104-664-11	ELECT	47µF	20%	25V
C702	1-136-165-00	MYLAR	0.1µF	5%	50V
C703	1-104-664-11	ELECT	47µF	20%	25V
C704	1-107-649-11	ELECT	2.2µF	20%	250V
C705	1-107-652-11	ELECT	10µF	20%	250V
C707	1-162-114-00	CERAMIC	0.0047µF		2KV
C708	1-136-165-00	MYLAR	0.1µF	5%	50V
C709	1-126-934-11	ELECT	220µF	20%	16V
C710	1-126-964-11	ELECT	10µF	20%	50V

CONNECTOR

CN701 *	1-564-506-11	PLUG, CONNECTOR 3P
CN702	1-695-915-11	TAB (CONTACT)
CN704	1-784-281-11	HOUSING, CONNECTOR 1P
CN705 *	1-564-512-11	PLUG, CONNECTOR 9P
CN706 *	1-564-509-11	PLUG, CONNECTOR 6P

Note:

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Note:

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CB HZ K

REF.NO.	PART NO.	DESCRIPTION			REMARK
	DIODE				
D701	8-719-901-83	DIODE 1SS83TD			
D702	8-719-901-83	DIODE 1SS83TD			
D703	8-719-901-83	DIODE 1SS83TD			
D704	8-719-302-43	DIODE RGP10GPKG23			
	IC				
IC701	8-759-803-42	IC LA6500-FA			
IC702	8-759-562-43	IC TDA6108JF/N1B			
	JACK				
J701 ⚠	1-451-470-21	SOCKET, CRT			
	COIL				
L701	1-408-613-31	INDUCTOR	68µH		
	TRANSISTOR				
Q700	8-729-423-33	TRANSISTOR 2SC3311A-QRSTA			
Q701	8-729-423-33	TRANSISTOR 2SC3311A-QRSTA			
	RESISTOR				
R700	1-247-863-91	CARBON	22K	5%	1/4W
R701	1-249-429-11	CARBON	10K	5%	1/4W
R702	1-247-815-91	CARBON	220	5%	1/4W
R703	1-247-807-31	CARBON	100	5%	1/4W
R704	1-249-421-11	CARBON	2.2K	5%	1/4W
R705	1-216-073-00	RES-CHIP	10K	5%	1/10W
R706	1-249-381-11	CARBON	1	5%	1/4W
R707	1-249-383-11	CARBON	1.5	5%	1/4W
R708	1-247-807-31	CARBON	100	5%	1/4W
R709	1-247-807-31	CARBON	100	5%	1/4W
R710	1-247-807-31	CARBON	100	5%	1/4W
R711	1-260-099-11	CARBON	1K	5%	1/2W
R712	1-260-099-11	CARBON	1K	5%	1/2W
R713	1-260-099-11	CARBON	1K	5%	1/2W
R714	1-260-087-11	CARBON	100	5%	1/2W
R715	1-260-132-11	CARBON	560K	5%	1/2W
R716	1-260-123-11	CARBON	100K	5%	1/2W
R718	1-216-375-00	METAL OXIDE	3.3	5%	2W
R719	1-215-888-00	METAL OXIDE	220	5%	2W
R720	1-249-421-11	CARBON	2.2K	5%	1/4W
R721	1-249-421-11	CARBON	2.2K	5%	1/4W

REF.NO.	PART NO.	DESCRIPTION			REMARK
	VARIABLE RESISTOR				
RV701	1-241-656-11	RES, ADJ, METAL FILM			110M

HZ

*	**A-1372-117-A**	**MOUNTED PWB, HZ (KV-21FE12A ONLY)**			
	CONNECTOR				
CN901 *	1-580-843-11	PIN, CONNECTOR (POWER)			
CN902 *	1-580-843-11	PIN, CONNECTOR (POWER)			
	SWITCH				
S901 ⚠	1-571-433-21	SWITCH, PUSH (AC POWER)			

K

*	**A-1380-627-A**	**K (VAR) MOUNTED PC BOARD (KV20FV12/21FV12/C ONLY)**			
	CAPACITOR				
C201	1-126-963-11	ELECT	4.7µF	20.00%	50V
C202	1-126-963-11	ELECT	4.7µF	20.00%	50V
C404	1-164-182-11	CERAMIC CHIP	0.0033µF	10.00%	50V
C405	1-163-034-00	CERAMIC CHIP	0.033µF		50V
C406	1-163-011-11	CERAMIC CHIP	0.0015µF	10.00%	50V
C407	1-164-222-11	CERAMIC CHIP	0.22µF		25V
C408	1-164-222-11	CERAMIC CHIP	0.22µF		25V
C409	1-163-011-11	CERAMIC CHIP	0.0015µF	10.00%	50V
C410	1-163-034-00	CERAMIC CHIP	0.033µF		50V
C411	1-164-182-11	CERAMIC CHIP	0.0033µF	10.00%	50V
C412	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C413	1-126-963-11	ELECT	4.7µF	20.00%	50V
C414	1-126-963-11	ELECT	4.7µF	20.00%	50V
C415	1-126-963-11	ELECT	4.7µF	20.00%	50V
C416	1-126-963-11	ELECT	4.7µF	20.00%	50V
C417	1-126-963-11	ELECT	4.7µF	20.00%	50V
C418	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C419	1-164-346-11	CERAMIC CHIP	1µF		16V
C422	1-126-963-11	ELECT	4.7µF	20.00%	50V
C423	1-126-963-11	ELECT	4.7µF	20.00%	50V
C450	1-126-963-11	ELECT	4.7µF	20.00%	50V
C451	1-126-963-11	ELECT	4.7µF	20.00%	50V
C458	1-126-963-11	ELECT	4.7µF	20.00%	50V
C459	1-126-963-11	ELECT	4.7µF	20.00%	50V
C460	1-126-965-11	ELECT	22µF	20.00%	50V

K MB

Note:

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Note:

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REF.NO.	PART NO.	DESCRIPTION			REMARK
	CONNECTOR				
CN450	1-573-301-21	CONNECTOR, BOARD TO BOARD 20P			
	IC				
IC404	8-759-658-01	IC NJW1130G			
	CHIP CONDUCTOR				
JR402	1-216-295-91	SHORT			
JR405	1-216-295-91	SHORT			
JR406	1-216-295-91	SHORT			
JR407	1-216-295-91	SHORT			
JR408	1-216-295-91	SHORT			
JR420	1-216-295-91	SHORT			
JR421	1-216-295-91	SHORT			
JR422	1-216-295-91	SHORT			
JR426	1-216-295-91	SHORT			
JR427	1-216-295-91	SHORT			
JR428	1-216-295-91	SHORT			
JR429	1-216-295-91	SHORT			
JR450	1-216-295-91	SHORT			
JR451	1-216-295-91	SHORT			
JR452	1-216-295-91	SHORT			
	RESISTOR				
R403	1-216-025-91	RES-CHIP	100	5%	1/10W
R404	1-216-025-91	RES-CHIP	100	5%	1/10W
R405	1-216-025-91	RES-CHIP	100	5%	1/10W
R406	1-216-025-91	RES-CHIP	100	5%	1/10W
R407	1-216-025-91	RES-CHIP	100	5%	1/10W
R408	1-216-025-91	RES-CHIP	100	5%	1/10W
R409	1-216-025-91	RES-CHIP	100	5%	1/10W
R410	1-216-025-91	RES-CHIP	100	5%	1/10W
R450	1-216-025-91	RES-CHIP	100	5%	1/10W
R451	1-216-025-91	RES-CHIP	100	5%	1/10W

MB

*	A-1304-183-A	MB (VAR) MOUNTED PC BOARD (KV-20FS12/20FE12/C/21FM12 ONLY)
*	A-1304-188-A	MB (VAR) MOUNTED PC BOARD (KV 20FV12/21FV12/C ONLY)
*	A-1304-194-A	MB (VAR) MOUNTED PC BOARD (KV-21FE12A ONLY)
*	A-1304-201-A	MB (VAR) MOUNTED PC BOARD (KV-21FM12 ONLY)

REF.NO.	PART NO.	DESCRIPTION		REMARK	
	CAPACITOR				
C1002	1-107-698-11	ELECT	10µF	20%	25V
		(KV-21FV12/21FV12/C ONLY)			
C1005	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1008	1-126-964-11	ELECT	10µF	20%	50V
C1010	1-163-035-00	CERAMIC CHIP	0.047µF		50V
C1011	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1012	1-126-960-11	ELECT	1µF	20%	50V
C1013	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1014	1-130-495-00	MYLAR	0.1µF	5%	50V
C1015	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C1016	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C1018	1-126-960-11	ELECT	1µF	20%	50V
C1019	1-104-664-11	ELECT	47µF	20%	25V
C1020	1-164-161-11	CERAMIC CHIP	0.0022µF	10%	50V
C1021	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1022	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C1023	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1024	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1026	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1027	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C1028	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1029	1-164-161-11	CERAMIC CHIP	0.0022µF	10%	50V
C1030	1-115-566-11	CERAMIC CHIP	4.7µF	10.00%	10V
		(KV-20FS12/21FE12/A/C ONLY)			
C1031	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1032	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C1034	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1035	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C1036	1-126-963-11	ELECT	4.7µF	20%	50V
C1037	1-163-010-11	CERAMIC CHIP	0.0012µF	10%	50V
C1038	1-163-010-11	CERAMIC CHIP	0.0012µF	10%	50V
C1039	1-163-010-11	CERAMIC CHIP	0.0012µF	10%	50V
C1040	1-163-010-11	CERAMIC CHIP	0.0012µF	10%	50V
C1041	1-126-935-11	ELECT	470µF	20%	16V
C1042	1-164-161-11	CERAMIC CHIP	0.0022µF	10%	50V
C1043	1-163-809-11	CERAMIC CHIP	0.047µF	10%	25V
C1048	1-137-194-81	MYLAR	0.47µF	5%	50V
C1049	1-163-017-00	CERAMIC CHIP	0.0047µF	10%	50V
C1050	1-163-037-11	CERAMIC CHIP	0.022µF	10%	50V
C1053	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C1055	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C1056	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1058	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1060	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1066	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1068	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1071	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1072	1-163-259-91	CERAMIC CHIP	220PF	5%	50V

Note:

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Note:

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MB

REF.NO.	PART NO.	DESCRIPTION		REMARK	
C1073	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1074	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1075	1-126-935-11	ELECT	470µF	20%	16V
C1076	1-126-959-11	ELECT	0.47µF	20%	50V
C1077	1-126-964-11	ELECT	10µF	20%	50V
C1099	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1304	1-126-959-11	ELECT	0.47µF	20%	50V
C1305	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1306	1-126-933-11	ELECT	100µF	20%	16V
C1307	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1308	1-126-933-11	ELECT	100µF	20%	16V
C1309	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1310	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1311	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C1313	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1315	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1320	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1321	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1322	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1323	1-126-933-11	ELECT	100µF	20%	16V
C1324	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1325	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C1326	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1327	1-126-933-11	ELECT	100µF	20%	16V
C1328	1-163-227-11	CERAMIC CHIP	10PF	0.50PF	50V
C1329	1-163-010-11	CERAMIC CHIP	0.0012µF	10%	50V
C1330	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C1331	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1332	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1334	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1335	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1336	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1339	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1340	1-126-963-11	ELECT	4.7µF	20%	50V
C1341	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1342	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1343	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C1344	1-126-935-11	ELECT	470µF	20%	16V
C1345	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1349	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1350	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1351	1-126-963-11	ELECT	4.7µF	20%	50V
C1352	1-104-664-11	ELECT	47µF	20%	25V
C1353	1-126-964-11	ELECT	10µF	20%	50V
C1354	1-126-959-11	ELECT	0.47µF	20%	50V
C1354	1-126-957-11	ELECT	0.22µF	20.00%	50V
		(KV-21FE12A ONLY)			
C1355	1-126-767-11	ELECT	1000µF	20%	16V
C1356	1-163-133-00	CERAMIC CHIP	470PF	5%	50V

REF.NO.	PART NO.	DESCRIPTION		REMARK	
C1356	1-163-259-91	CERAMIC CHIP	220PF	5.00%	50V
		(KV-21FE12A ONLY)			
C1357	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C1358	1-126-963-11	ELECT	4.7µF	20%	50V
C1359	1-126-964-11	ELECT	10µF	20%	50V
C1361	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C1363	1-163-233-11	CERAMIC CHIP	18PF	5.00%	50V
		(KV-21FE12A ONLY)			
C1364	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C1365	1-163-233-11	CERAMIC CHIP	18PF	5.00%	50V
		(KV-21FE12A ONLY)			
C1366	1-126-964-11	ELECT	10µF	20%	50V
C1367	1-126-964-11	ELECT	10µF	20%	50V
		(KV-20FV12/21FV12/C ONLY)			
C1375	1-163-034-00	CERAMIC CHIP	0.033µF		50V
C1376	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C1377	1-126-960-11	ELECT	1µF	20%	50V
C1378	1-163-038-91	CERAMIC CHIP	0.1µF	25V	
C1379	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1379	1-163-017-00	CERAMIC CHIP	0.0047µF	10.00%	
		(KV-21FE12A ONLY)			
C1380	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C1381	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C1382	1-126-964-11	ELECT	10µF	20%	50V
C1385	1-126-964-11	ELECT	10µF	20%	50V
C1386	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C1387	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C1389	1-163-038-91	CERAMIC CHIP	0.1µF		25V
		(KV-20FV12/21FV12/C ONLY)			
C1392	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C1394	1-104-664-11	ELECT	47µF	20%	25V
C1399	1-163-243-11	CERAMIC CHIP	47PF	5%	50V

CONNECTOR

CN1001 *	1-564-511-11	PLUG, CONNECTOR 8P
CN1002 *	1-560-124-00	PLUG, CONNECTOR (2.5MM) 4P
CN1003	1-573-301-21	CONNECTOR, BOARD TO 20P
CN1004	1-573-301-21	CONNECTOR, BOARD TO 20P

DIODE

D1001	8-719-921-44	DIODE MTZJ-T-77-5.1C
D1003	8-719-976-99	DIODE UDZ-TE-17-5.1B
D1005	8-719-109-89	DIODE MTZJ-T-77-5.6C
D1006	8-719-073-01	DIODE MA111-TX
		(KV-20FS12/21FE12/A/C ONLY)
D1010	8-719-977-22	DIODE UDZ-TE-17-9.1B
D1011	8-719-073-01	DIODE MA111-TX
D1012	8-719-073-01	DIODE MA111-TX
D1013	8-719-977-22	DIODE UDZ-TE-17-9.1B

MB

Note:

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REF.NO.	PART NO.	DESCRIPTION	REMARK
D1014	8-719-073-01	DIODE MA111-TX	
D1301	8-719-914-44	DIODE DAP202K-T-146	
D1310	8-719-976-99	DIODE UDZ-TE-17-5.1B	

FERRITE BEAD

REF.NO.	PART NO.	DESCRIPTION	REMARK
FB1301	1-412-911-11	FERRITE	0µH
FB1302	1-412-911-11	FERRITE	0µH

FILTER

REF.NO.	PART NO.	DESCRIPTION	REMARK
FL1301	1-239-847-11	FILTER, LOW PASS	
FL1302	1-239-847-11	FILTER, LOW PASS	
FL1303	1-239-847-11	FILTER, LOW PASS	

IC

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC1001	8-759-658-03	IC M37273MF-258SP	
IC1002	8-759-353-00	IC NJM2534M(TE2) (KV-20FV12/21FV12/C ONLY)	
IC1003	8-759-527-77	IC M24C16-MN6T	
IC1301 ⚠	8-752-092-17	IC CXA2131AS	
IC1301 ⚠	8-752-090-40	IC CXA2135S (KV-21FE12A ONLY)	
IC1302	8-759-655-75	IC TC90A49P	
IC1304	8-759-353-00	IC NJM2534M(TE2)	
IC1305	8-759-658-02	IC BA3993F	

CHIP CONDUCTOR

REF.NO.	PART NO.	DESCRIPTION	REMARK
JR0002	1-216-295-91	SHORT	
JR1000	1-216-295-91	SHORT	
JR1001	1-216-295-91	SHORT	
JR1002	1-216-295-91	SHORT	
JR1003	1-216-295-91	SHORT	
JR1004	1-216-295-91	SHORT	
JR1005	1-216-295-91	SHORT	
JR1006	1-216-295-91	SHORT	
JR1007	1-216-295-91	SHORT	
JR1008	1-216-295-91	SHORT	
JR1009	1-216-295-91	SHORT	
JR1010	1-216-295-91	SHORT	
JR1011	1-216-295-91	SHORT	
JR1012	1-216-295-91	SHORT	
JR1013	1-216-295-91	SHORT	
JR1014	1-216-295-91	SHORT	
JR1015	1-216-295-91	SHORT	
JR1016	1-216-295-91	SHORT	
JR1017	1-216-295-91	SHORT	
JR1018	1-216-295-91	SHORT	
JR1083	1-216-295-91	SHORT (ALL EXCEPT KV-20FV12/21FV12/C/21FE12A)	
JR1300	1-216-295-91	SHORT	
JR1301	1-216-295-91	SHORT	
JR1302	1-216-295-91	SHORT	
JR1303	1-216-295-91	SHORT	
JR1304	1-216-295-91	SHORT	
JR1305	1-216-295-91	SHORT	
JR1306	1-216-295-91	SHORT	
JR1307	1-216-295-91	SHORT	
JR1308	1-216-295-91	SHORT	
JR1309	1-216-295-91	SHORT	
JR1310	1-216-295-91	SHORT	
JR1311	1-216-295-91	SHORT	
JR1312	1-216-295-91	SHORT	
JR1313	1-216-295-91	SHORT	
JR1314	1-216-295-91	SHORT	
JR1315	1-216-295-91	SHORT	
JR1316	1-216-295-91	SHORT	
JR1317	1-216-295-91	SHORT	
JR1318	1-216-295-91	SHORT	
JR1319	1-216-295-91	SHORT	
JR1320	1-216-295-91	SHORT	
JR1321	1-216-295-91	SHORT	
JR1322	1-216-295-91	SHORT	
JR1323	1-216-295-91	SHORT	
JR1324	1-216-295-91	SHORT	
JR1325	1-216-295-91	SHORT	

COIL

REF.NO.	PART NO.	DESCRIPTION	REMARK
L1001	1-414-273-11	INDUCTOR	100µH
L1003	1-414-273-11	INDUCTOR	100µH
L1004	1-410-463-11	INDUCTOR	2.7µH
L1302	1-414-267-11	INDUCTOR	10µH
L1303	1-414-267-11	INDUCTOR	10µH
L1304	1-414-267-11	INDUCTOR	10µH
L1305	1-414-267-11	INDUCTOR	10µH
L1310	1-414-267-11	INDUCTOR	10µH
L1311	1-414-271-11	INDUCTOR	47µH
L1315	1-414-267-11	INDUCTOR	10µH

TRANSISTOR

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q1001	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1002	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1003	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q1009	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1010	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX (ALL EXCEPT KV-20FS12/21FE12/C)	

Note:

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Note:

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MB

REF.NO.	PART NO.	DESCRIPTION			REMARK
Q1010	8-729-120-28	TRANSISTOR 2SC2412K-T-146-QR			
		(KV-20FS12/21FE12/C ONLY)			
Q1011	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q1301	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q1302	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1306	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q1307	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1308	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1310	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q1311	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q1312	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1313	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1315	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1316	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1317	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1325	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q1326	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q1327	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q1328	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1329	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1330	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q1331	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1332	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1336	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q1350	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
Q1354	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX			
	RESISTOR				
R556	1-216-295-91	SHORT			
R1001	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1016	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1017	1-216-025-91	RES-CHIP	100	5%	1/10W
R1018	1-249-429-11	CARBON	10K	5%	1/4W
R1019	1-216-045-00	RES-CHIP	680	5%	1/10W
R1020	1-216-097-91	RES-CHIP	100K	5%	1/10W
R1021	1-216-121-91	RES-CHIP	1M	5%	1/10W
R1022	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1023	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1024	1-216-033-00	RES-CHIP	220	5%	1/10W
R1025	1-208-814-91	METAL CHIP	22K	1%	1/10W
R1026	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1027	1-216-041-00	RES-CHIP	470	5%	1/10W
R1028	1-216-045-00	RES-CHIP	680	5%	1/10W
R1029	1-216-113-00	RES-CHIP	470K	5%	1/10W
R1030	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1031	1-216-041-00	RES-CHIP	470	5%	1/10W
R1032	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1033	1-216-081-00	RES-CHIP	22K	5%	1/10W

REF.NO.	PART NO.	DESCRIPTION			REMARK
R1034	1-216-043-91	RES-CHIP	560	5%	1/10W
R1035	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1036	1-216-033-00	RES-CHIP	220	5%	1/10W
R1037	1-216-033-00	RES-CHIP	220	5%	1/10W
R1038	1-216-025-91	RES-CHIP	100	5%	1/10W
R1040	1-216-033-00	RES-CHIP	220	5%	1/10W
R1041	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1042	1-249-413-11	CARBON	470	5%	1/4W
		(ALL EXCEPT KV-21FM12/21FE12A)			
R1042	1-249-414-11	CARBON	560	5%	1/4W
		(KV-21FM12 ONLY)			
R1043	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R1044	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1045	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1046	1-249-425-11	CARBON	4.7K	5%	1/4W
R1047	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1048	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1049	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1050	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1052	1-216-033-00	RES-CHIP	220	5%	1/10W
R1053	1-216-033-00	RES-CHIP	220	5%	1/10W
R1054	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1055	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1056	1-216-081-00	RES-CHIP	22K	5%	1/10W
R1057	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1058	1-216-635-11	METAL CHIP	220	1%	1/10W
R1059	1-247-815-91	CARBON	220	5%	1/4W
R1060	1-216-635-11	METAL CHIP	220	1%	1/10W
R1061	1-247-815-91	CARBON	220	5%	1/4W
R1062	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1063	1-216-033-00	RES-CHIP	220	5%	1/10W
R1064	1-216-025-91	RES-CHIP	100	5%	1/10W
R1065	1-216-033-00	RES-CHIP	220	5%	1/10W
R1066	1-216-033-00	RES-CHIP	220	5%	1/10W
R1067	1-216-033-00	RES-CHIP	220	5%	1/10W
R1068	1-216-025-91	RES-CHIP	100	5%	1/10W
R1069	1-216-033-00	RES-CHIP	220	5%	1/10W
R1070	1-216-033-00	RES-CHIP	220	5%	1/10W
R1071	1-208-806-11	METAL CHIP	10K	1%	1/10W
R1072	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1073	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1074	1-216-355-11	METAL OXIDE	3.3	5%	1W
R1075	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1076	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1077	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1078	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1079	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R1080	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R1081	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R1082	1-216-065-91	RES-CHIP	4.7K	5%	1/10W

MB

Note:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION		REMARK	
R1084	1-216-045-00	RES-CHIP	680	5%	1/10W
R1085	1-216-045-00	RES-CHIP	680	5%	1/10W
R1086	1-216-045-00	RES-CHIP	680	5%	1/10W
R1087	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R1088	1-216-295-91	SHORT			
R1090	1-216-033-00	RES-CHIP	220	5%	1/10W
R1095	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
	(ALL EXCEPT KV-20FV12/21FV12/C)				
R1098	1-216-033-00	RES-CHIP	220	5%	1/10W
R1099	1-208-798-11	METAL CHIP	4.7K	1%	1/10W
R1103	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1104	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1105	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1106	1-216-085-00	RES-CHIP	33K	5%	1/10W
	(KV-20FS12/21FE12/A/C ONLY)				
R1108	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1109	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1110	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R1111	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1300	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1301	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R1302	1-216-041-00	RES-CHIP	470	5%	1/10W
R1303	1-216-025-91	RES-CHIP	100	5%	1/10W
R1304	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1306	1-216-033-00	RES-CHIP	220	5%	1/10W
R1308	1-216-033-00	RES-CHIP	220	5%	1/10W
R1310	1-216-025-91	RES-CHIP	100	5%	1/10W
R1311	1-216-047-91	RES-CHIP	820	5%	1/10W
R1312	1-208-806-11	METAL CHIP	10K	1%	1/10W
R1313	1-216-033-00	RES-CHIP	220	5%	1/10W
R1314	1-216-022-00	RES-CHIP	75	5%	1/10W
R1315	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R1316	1-216-295-91	SHORT			
R1317	1-216-022-00	RES-CHIP	75	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R1318	1-216-022-00	RES-CHIP	75	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R1319	1-216-022-00	RES-CHIP	75	5%	1/10W
R1320	1-216-025-91	RES-CHIP	100	5%	1/10W
R1322	1-216-081-00	RES-CHIP	22K	5%	1/10W
R1323	1-216-025-91	RES-CHIP	100	5%	1/10W
R1325	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R1326	1-216-043-91	RES-CHIP	560	5%	1/10W
R1327	1-216-025-91	RES-CHIP	100	5%	1/10W
R1328	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R1329	1-216-091-00	RES-CHIP	56K	5%	1/10W
R1330	1-216-081-00	RES-CHIP	22K	5%	1/10W
R1331	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1332	1-216-043-91	RES-CHIP	560	5%	1/10W
R1333	1-216-033-00	RES-CHIP	220	5%	1/10W

REF.NO.	PART NO.	DESCRIPTION		REMARK	
R1334	1-216-025-91	RES-CHIP	100	5%	1/10W
R1335	1-216-025-91	RES-CHIP	100	5%	1/10W
R1336	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R1338	1-216-091-00	RES-CHIP	56K	5%	1/10W
R1342	1-216-025-91	RES-CHIP	100	5%	1/10W
R1344	1-216-025-91	RES-CHIP	100	5%	1/10W
R1345	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1346	1-216-033-00	RES-CHIP	220	5%	1/10W
R1347	1-216-025-91	RES-CHIP	100	5%	1/10W
R1348	1-216-025-91	RES-CHIP	100	5%	1/10W
R1349	1-216-295-91	SHORT	0		
		(KV-21FE12A ONLY)			
R1350	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1351	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R1352	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1355	1-216-025-91	RES-CHIP	100	5%	1/10W
R1356	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R1357	1-216-043-91	RES-CHIP	560	5%	1/10W
R1358	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R1359	1-216-025-91	RES-CHIP	100	5%	1/10W
R1360	1-216-041-00	RES-CHIP	470	5%	1/10W
R1361	1-216-295-91	SHORT			
R1362	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1363	1-216-043-91	RES-CHIP	560	5%	1/10W
R1364	1-216-025-91	RES-CHIP	100	5%	1/10W
R1365	1-216-025-91	RES-CHIP	100	5%	1/10W
R1366	1-216-025-91	RES-CHIP	100	5%	1/10W
R1367	1-216-025-91	RES-CHIP	100	5%	1/10W
R1368	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
	(ALL EXCEPT KV-20FV12/21FV12/C)				
R1369	1-259-884-11	CARBON	4.7M	5%	1/4W
		(KV-21FE12A ONLY)			
R1371	1-216-295-91	SHORT	0		
		(KV-21FE12A ONLY)			
R1372	1-216-295-91	SHORT			
R1373	1-216-295-91	SHORT	0		
		(KV-21FE12A ONLY)			
R1374	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1375	1-216-295-91	SHORT			
R1376	1-216-295-91	SHORT			
R1378	1-216-295-91	SHORT			
R1379	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R1380	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R1381	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R1382	1-216-097-91	RES-CHIP	100K	5%	1/10W
R1383	1-216-097-91	RES-CHIP	100K	5%	1/10W
R1384	1-216-097-91	RES-CHIP	100K	5%	1/10W
R1385	1-216-113-00	RES-CHIP	470K	5%	1/10W
		(ALL EXCEPT KV-21FE12A)			
R1386	1-216-073-00	RES-CHIP	10K	5%	1/10W

Note:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

MB VB

REF.NO.	PART NO.	DESCRIPTION		REMARK	
R1387	1-216-095-00	RES-CHIP	82K	5%	1/10W
R1387	1-216-085-00	RES-CHIP	33K	5%	1/10W
		(KV-21FE12A ONLY)			
R1388	1-216-129-00	RES-CHIP	2.2M	5%	1/10W
R1389	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R1389	1-216-077-91	RES-CHIP	15K	5%	1/10W
		(KV-21FE12A ONLY)			
R1390	1-216-025-91	RES-CHIP	100	5%	1/10W
R1391	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1392	1-216-295-91	SHORT			
R1393	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R1394	1-216-033-00	RES-CHIP	220	5%	1/10W
R1395	1-216-033-00	RES-CHIP	220	5%	1/10W
R1396	1-216-033-00	RES-CHIP	220	5%	1/10W
R1397	1-216-033-00	RES-CHIP	220	5%	1/10W
R1398	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1399	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1400	1-216-295-91	SHORT			
R1401	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1402	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1403	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1404	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1406	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1407	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1409	1-216-043-91	RES-CHIP	560	5%	1/10W
R1410	1-216-295-91	SHORT			
		(ALL EXCEPT KV-21FE12A)			
R1411	1-216-033-00	RES-CHIP	220	5%	1/10W
R1412	1-216-635-11	METAL CHIP	220	1%	1/10W
R1413	1-216-091-00	RES-CHIP	56K	5%	1/10W
R1414	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1415	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1416	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R1417	1-216-035-00	RES-CHIP	270	5%	1/10W
R1418	1-216-045-00	RES-CHIP	680	5%	1/10W
R1419	1-216-295-91	SHORT			
R1442	1-216-103-00	RES-CHIP	180K	5%	1/10W
R1442	1-216-107-00	RES-CHIP	270K	5%	1/10W
		(KV-21FE12A ONLY)			

CRYSTAL

X1001	1-767-487-11	VIBRATOR, CRYSTAL
X1303	1-579-973-11	VIBRATOR, CRYSTAL
		(KV-21FE12A ONLY)
X1304	1-567-505-11	VIBRATOR, CRYSTAL
X1305	1-579-972-11	VIBRATOR, CRYSTAL
		(KV-21FE12A ONLY)

VB

REF.NO.	PART NO.	DESCRIPTION
*	**A-1342-537-A**	**VB (VAR) MOUNTED PC BOARD**
	4-382-854-11	SCREW (M3X10), P, SW (+)

CAPACITOR

C901	1-107-667-11	ELECT	2.2µF	20.00%	160V
C902	1-130-491-00	MYLAR	0.047µF	5.00%	50V
C903	1-126-925-11	ELECT	470µF	20.00%	10V
C904	1-130-471-00	MYLAR	0.001µF	5.00%	50V
C905	1-106-383-00	MYLAR	0.047µF	10.00%	200V
C906	1-130-471-00	MYLAR	0.001µF	5.00%	50V
C907	1-107-638-11	ELECT	33µF	20.00%	160V
C908	1-126-925-11	ELECT	470µF	20.00%	10V
C909	1-161-830-00	CERAMIC	0.0047µF		500V
C910	1-104-999-11	MYLAR	0.1µF	10.00%	200V
C911	1-104-665-11	ELECT	100µF	20.00%	10V
C912	1-126-941-11	ELECT	470µF	20.00%	25V
C914	1-130-491-00	MYLAR	0.047µF	5.00%	50V

CONNECTOR

CN901 *	1-564-508-11	PLUG, CONNECTOR 5P
CN903 *	1-564-506-11	PLUG, CONNECTOR 3P

DIODE

D901	8-719-110-88	DIODE MTZJ-T-77-39
D902	8-719-110-88	DIODE MTZJ-T-77-39
D903	8-719-991-33	DIODE 1SS133T-77

TRANSISTOR

Q901	8-729-017-06	TRANSISTOR 2SC4793
Q902	8-729-017-05	TRANSISTOR 2SA1837
Q903	8-729-423-33	TRANSISTOR 2SC3311A-QRSTA
Q904	8-729-423-33	TRANSISTOR 2SC3311A-QRSTA
Q905	8-729-119-76	TRANSISTOR 2SA1309A-QRSTA
Q906	8-729-423-33	TRANSISTOR 2SC3311A-QRSTA

RESISTOR

R901	1-249-401-11	CARBON	47	5%	1/4W
R902	1-249-386-11	CARBON	2.7	5%	1/4W
R903	1-249-414-11	CARBON	560	5%	1/4W
R904	1-249-432-11	CARBON	18K	5%	1/4W
R905	1-249-417-11	CARBON	1K	5%	1/4W
R906	1-249-432-11	CARBON	18K	5%	1/4W
R907	1-249-386-11	CARBON	2.7	5%	1/4W

VB

Note:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION		REMARK	
R908	1-249-414-11	CARBON	560	5%	1/4W
R909	1-260-312-11	CARBON	47	5%	1/2W
R910	1-216-476-11	METAL OXIDE	180	5%	3W
R911	1-249-403-11	CARBON	68	5%	1/4W
R912	1-247-815-91	CARBON	220	5%	1/4W
R913	1-249-403-11	CARBON	68	5%	1/4W
R914	1-249-410-11	CARBON	270	5%	1/4W
R915	1-249-417-11	CARBON	1K	5%	1/4W
R916	1-249-417-11	CARBON	1K	5%	1/4W
R917	1-249-417-11	CARBON	1K	5%	1/4W
R918	1-247-807-31	CARBON	100	5%	1/4W
R919	1-247-807-31	CARBON	100	5%	1/4W
R920	1-249-416-11	CARBON	820	5%	1/4W
R921	1-249-429-11	CARBON	10K	5%	1/4W
R922	1-249-397-11	CARBON	22	5%	1/4W
R923	1-249-401-11	CARBON	47	5%	1/4W

ACCESSORIES AND PACKAGING

	PART NO.	DESCRIPTION
	1-501-730-41	ANTENNA, TELESCOPIC (ALL EXCEPT KV-20FS12/20FV12)
*	4-073-838-01	BAG, PROTECTION
	4-073-495-01	CARTON, INDIVIDUAL (KV-20FS12 ONLY)
*	4-070-554-02	CARTON, INDIVIDUAL (KV-20FV12 ONLY)
*	4-073-479-01	CARTON, INDIVIDUAL (KV-21FM12/21FE12/A/C ONLY)
*	4-073-839-01	CARTON, INDIVIDUAL (KV-21FV12/C ONLY)
	4-073-494-01	CUSHION ASSY, LOWER (KV-20FS12 ONLY)
*	4-070-563-01	CUSHION ASSY, LOWER (KV-20FV12/21FV12/C ONLY)
*	4-073-477-01	CUSHION ASSY, LOWER (KV-21FM12/21FE12/A/C ONLY)
	4-073-493-01	CUSHION ASSY, UPPER (KV-20FS12 ONLY)
*	4-070-562-01	CUSHION ASSY, UPPER (KV-20FV12/21FV12/C ONLY)
*	4-073-478-01	CUSHION ASSY, UPPER (KV-21FM12/21FE12/A/C ONLY)
	4-075-509-31	MANUAL, INSTRUCTION (KV-20FS12 ONLY)
	4-075-501-31	MANUAL, INSTRUCTION (KV-20FV12 ONLY)
	4-075-509-41	MANUAL, INSTRUCTION (KV-21FM12/21FE12/A/C ONLY)

REF.NO.	PART NO.	DESCRIPTION	REMARK
	4-075-501-41	MANUAL, INSTRUCTION (KV-21FV12/C ONLY)	
	1-417-182-11	CONVERTER (EAC-25) (ALL EXCEPT KV-20FS12/20FV12)	

REMOTE COMMANDER

PART NO.	DESCRIPTION
1-418-387-11	REMOTE COMMANDER (RM-Y168) (KV-20FV12/21FV12/C ONLY)
4-978-977-01	BATTERY COVER FOR RM-Y168
1-418-853-11	REMOTE COMMANDER (RM-Y172) (KV-21FM12 ONLY)
3-709-322-01	BATTERY COVER FOR RM-Y172
1-418-852-11	REMOTE COMMANDER (RM-Y173) (KV-20FS12/21FE12/A/C ONLY)
3-709-322-01	BATTERY COVER FOR RM-Y173

Sony Corporation
Sony Technology Center
Product Quality Division
Service Promotion Dept.

9-965-879-01

English
2000AS74350-1
Printed in USA
2000.2

Self Diagnosis Supported model

SERVICE MANUAL

BA-5 CHASSIS

MODEL	DEST	COMMANDER	CHASSIS NO.
KV-20FS12	*RM-Y173*	*US*	*SCC-S40A-A*
KV-20FS12	*RM-Y173*	*CND*	*SCC-S41A-A*
KV-20FV12	*RM-Y168*	*US*	*SCC-S40B-A*
KV-20FV12	*RM-Y168*	*CND*	*SCC-S41B-A*
KV-21FE12	*RM-Y173*	*E*	*SCC-S38A-A*
KV-21FE12A	*RM-Y173*	*E*	*SCC-S38F-A*
KV-21FE12C	*RM-Y173*	*E*	*SCC-S38B-A*
KV-21FM12	*RM-Y172*	*MX*	*SCC-S39A-A*
KV-21FV12	*RM-Y168*	*E*	*SCC-S38C-A*
KV-21FV12C	*RM-Y168*	*E*	*SCC-S38D-A*

CORRECTION- 1

SUBJECT: BLOCK DIAGRAM, A BOARD VOLTAGE TABLE, PARTS LIST (All Variant Parts Identified)

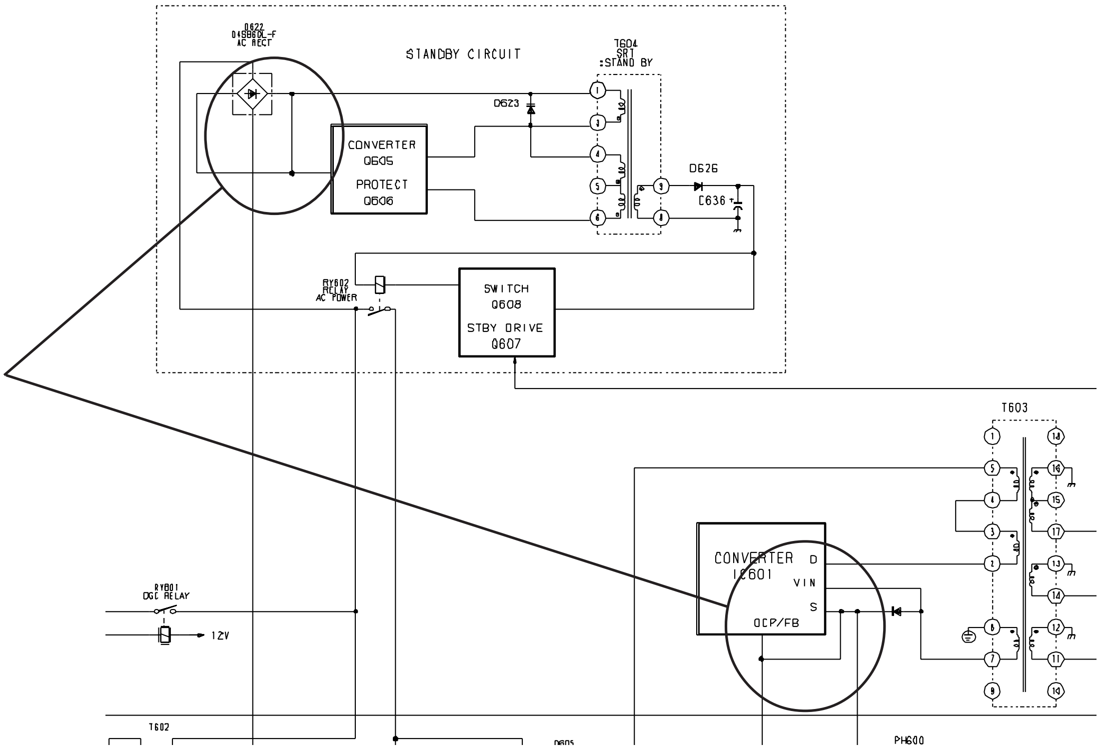
Correct the service manual as shown.
File this Correction with the service manual.

TRINITRON® COLOR TV

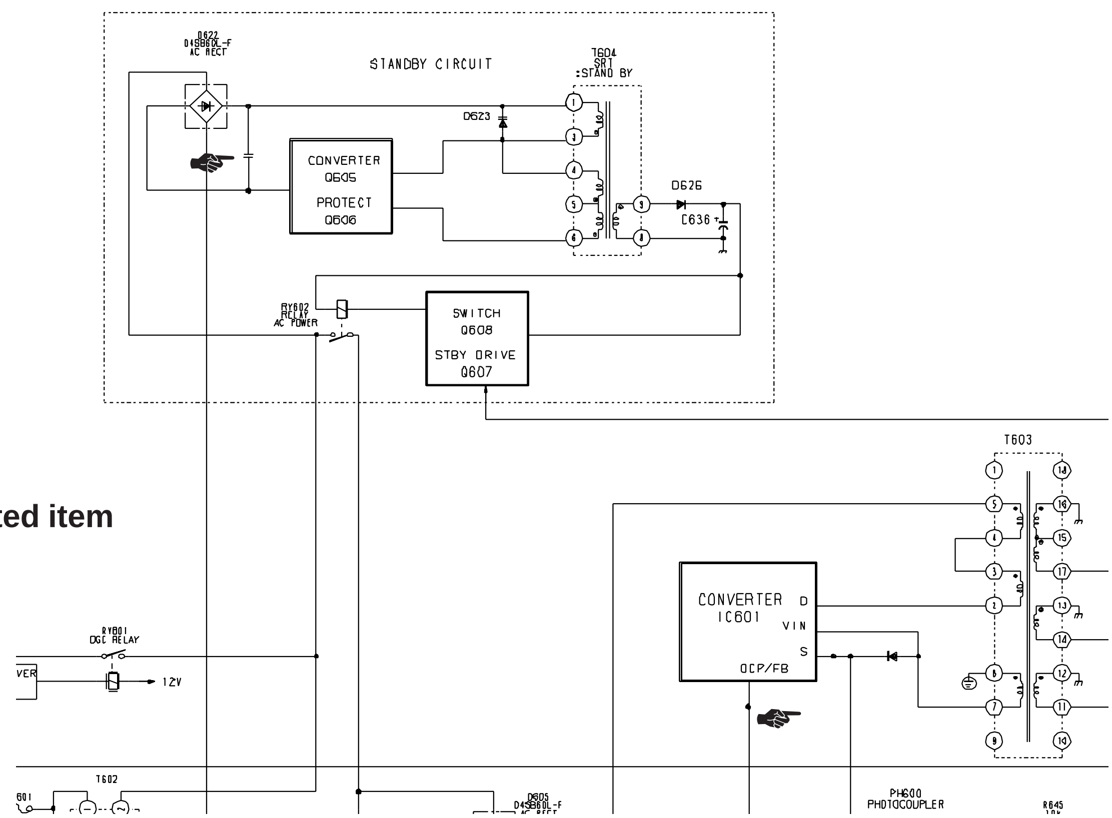
SONY®

SECTION 6-1. BLOCK DIAGRAM (Page 27)

INCORRECT



CORRECT



☞: **Corrected item**

SECTION 6 A BOARD IC VOLTAGE TABLES (Page 37)

☛: Corrected item

A BOARD IC VOLTAGE LIST

IC401

pin	volt
1	0.6
2	0.0
3	2.4
4	14.3
5	2.4
6	0.0
7	0.6
8	6.9
9	0.0
10	6.9
11	6.9
12	0.0
13	6.9

☛ **IC 402**

pin	volt
1	6.8
2	GND
3	14.1
4	6.8
5	4.3
6	NC
7	4.1
8	4.1
9	6.8
10	**4.1**
11	**4.1**
12	**4.1**
13	**5.2**
14	**6.8**
15	**14.1**
16	**GND**
17	**6.8**

IC405

pin	volt
1	6.0
2	0.1
3	6.1
4	0.1
5	6.1
6	9.0
7	5.3
8	GND

IC406

pin	volt
1	6.0
2	0.1
3	6.1
4	0.1
5	6.1
6	9.0
7	5.3
8	GND

IC501

pin	volt
1	0.2
2	3.7
3	2.5
4	GND
5	9.5
6	10.1
7	0.1
8	14.0

IC502

pin	volt
1	2.1
2	14.0
3	-12.6
4	-13.9
5	0.2
6	14.3
7	2.1

IC601

pin	volt
1	-31.8
2	-32.7
3	53.2
4	-23.8
5	-32.7

IC602

pin	volt
1	135.9
2	123.4
3	GND

IC603

pin	volt
1	13.3
2	8.9
3	GND
4	13.3

IC604

pin	volt
1	13.3
2	5.0
3	GND

IC2001

pin	volt
1	5.0
2	5.0
3	GND

TU101

pin	volt
1	8.6
2	30.7
3	5.1
4	4.9
5	4.9
6	GND
7	5.5
8	2.1
9	8.9
10	4.1
11	GND
12	N/C
13	N/C
14	N/C
15	N/C
16	N/C
17	4.7
18	4.4
19	5.0
20	5.0
21	0.3
22	0.0
23	0.0
24	0.0
25	0.0
26	4.5
27	4.5

All voltages are in V

SECTION 8
ELECTRICAL PARTS LIST

Note:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

- The components identified by ⧓ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- Items marked * are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

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RESISTORS
- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

REF. NO.	PART NO.	DESCRIPTION	REMARK

A

*	**A-1299-174-A**	**A COMPLETE PC BOARD (KV-21FE12/C ONLY)**	
*	**A-1299-182-A**	**A COMPLETE PC BOARD (KV-20FS12 ONLY)**	
*	**A-1299-183-A**	**A COMPLETE PC BOARD (KV-20FV12 ONLY)**	
*	**A-1299-189-A**	**A COMPLETE PC BOARD (KV-21FM12 ONLY)**	
*	**A-1299-201-A**	**A COMPLETE PC BOARD (KV-21FV12/C ONLY)**	
*	**A-1299-204-A**	**A COMPLETE PC BOARD (KV-21FE12A ONLY)**	

The high voltage leads associated with the FBT on this board are not included and must be oprdered separately. Order the following leads when requesting this A Board:

	1-251-642-52	HV CAP ASSY
	1-900-800-65	FOCUS LEAD
	1-900-803-22	G2 LEAD
	1-533-223-11	HOLDER, FUSE
*	4-374-846-11	COVER, CAPACITOR, CAP TYPE
	4-382-854-11	SCREW (M3X10), P, SW (+)
	4-382-854-11	SCREW (M3X10), P, SW (+)

CAPACITOR

REF. NO.	PART NO.	DESCRIPTION			REMARK
C100	1-164-346-11	CERAMIC CHIP	1µF		16V
C101	1-164-346-11	CERAMIC CHIP	1µF		16V
C102	1-126-933-11	ELECT	100µF	20%	16V
C104	1-126-941-11	ELECT	470µF	20%	25V
C105	1-104-664-11	ELECT	47µF	20%	25V
C204	1-163-017-00	CERAMIC CHIP	0.0047µF	10%	50V
C205	1-126-963-11	ELECT	4.7µF	20%	50V
C207	1-126-963-11	ELECT	4.7µF	20%	50V
		(KV-20FS12/21FM12/21FE12A ONLY)			
C208	1-126-963-11	ELECT	4.7µF	20%	50V
		(ALL EXCEPT KV-20FV12/21FV12/C)			
C210	1-126-963-11	ELECT	4.7µF	20%	50V
		(ALL EXCEPT KV-21FM12)			
C214	1-164-346-11	CERAMIC CHIP	1µF		16V
C215	1-164-346-11	CERAMIC CHIP	1µF		16V
		(ALL EXCEPT KV-21FM12)			
C216	1-126-963-11	ELECT	4.7µF	20%	50V
C219	1-126-964-11	ELECT	10µF	20%	50V
C401	1-126-968-11	ELECT	100µF	20%	50V
		(KV-21FV12/C ONLY)			
C402	1-126-943-11	ELECT	2200µF	20%	25V
C403	1-126-957-11	ELECT	0.22µF	20%	50V
C420	1-164-222-11	CERAMIC CHIP	0.22µF		25V
C421	1-164-222-11	CERAMIC CHIP	0.22µF		25V
		(ALL EXCEPT KV-21FM12)			
C435	1-164-222-11	CERAMIC CHIP	0.22UF		25V
		(KV-21FV12/C ONLY)			
C438	1-126-940-11	ELECT	330µF	20%	25V
C439	1-126-940-11	ELECT	330µF	20%	25V
C440	1-126-963-11	ELECT	4.7µF	20%	50V
		(ALL EXCEPT KV-20FV12/21FV12/C)			
C441	1-164-346-11	CERAMIC CHIP	1µF		16V
C442	1-126-963-11	ELECT	4.7µF	20%	50V
C443	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
		(ALL EXCEPT KV-20FV12/21FV12/C)			
C444	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
		(ALL EXCEPT KV-20FV12/21FV12/C)			
C445	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
		(ALL EXCEPT KV-20FV12/21FV12/C)			
C446	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
		(KV-20FS12/21FE12/A/C ONLY)			
C450	1-165-320-11	CERAMIC CHIP	0.47µF	10%	16V
C501	1-102-112-00	CERAMIC	330PF	10%	50V
C502	1-106-383-00	MYLAR	0.047µF	10%	200V
C503	1-102-212-00	CERAMIC	820PF	10%	500V
C504	1-102-002-00	CERAMIC	680PF	10%	500V
C505 ⚠	1-162-134-11	CERAMIC	470PF	10%	2KV
C506	1-162-318-11	CERAMIC	0.001µF	10%	500V
C507 ⚠	1-117-642-11	FILM	8200PF	3%	1.2KV
C508	1-137-150-11	MYLAR	0.01µF	10%	100V
C509 ⚠	1-162-116-00	CERAMIC	680PF	10%	2KV
C510	1-107-651-11	ELECT	4.7µF	20%	250V
C511 ⚠	1-115-519-11	FILM	0.56µF	5%	250V

Note:

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Note:

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REF.NO.		PART NO.	DESCRIPTION		REMARK	
C512	⚠	1-106-383-00	MYLAR	0.047µF	10%	200V
C513		1-106-343-00	MYLAR	0.001µF	10%	100V
C514	⚠	1-115-521-11	FILM	0.82µF	5%	250V
C515	⚠	1-162-116-00	CERAMIC	680PF	10%	2KV
C516		1-117-214-11	CERAMIC	0.001µF	10%	2KV
C520	⚠	1-129-722-00	FILM	0.047µF	5%	630V
C521		1-164-646-11	CERAMIC	2200PF	10%	500V
C523		1-126-941-11	ELECT	470µF	20%	25V
C524		1-102-244-00	CERAMIC	220PF	10%	500V
C525		1-162-815-11	CERAMIC	47PF	5%	500V
C526		1-126-960-11	ELECT	1µF	20%	50V
C527		1-126-965-11	ELECT	22µF	20%	50V
C528		1-164-161-11	CERAMIC CHIP	0.0022µF	10%	50V
C529		1-164-161-11	CERAMIC CHIP	0.0022µF	10%	50V
C530		1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C531		1-106-387-00	MYLAR	0.068µF	10%	200V
C533		1-126-941-11	ELECT	470µF	20%	25V
C534	⚠	1-126-964-11	ELECT	10µF	20%	50V
C535		1-126-959-11	ELECT	0.47µF	20%	50V
C537	⚠	1-126-963-11	ELECT	4.7µF	20%	50V
C539		1-107-645-11	ELECT	22µF	20%	160V
C540		1-107-645-11	ELECT	22µF	20%	160V
C541		1-126-969-11	ELECT	220µF	20%	50V
C542		1-126-967-11	ELECT	47µF	20%	50V
C543		1-137-194-81	MYLAR	0.47µF	5%	50V
C546	⚠	1-107-635-11	ELECT	4.7µF	20%	160V
C547	⚠	1-163-031-11	CERAMIC CHIP	0.01µF		50V
C548		1-123-024-21	ELECT	33µF		160V
C549	⚠	1-126-934-11	ELECT	220µF	20%	16V
C551	⚠	1-137-417-11	MYLAR	0.0047µF	10%	200V
C553		1-107-662-11	ELECT	22µF	20%	250V
C557		1-163-038-91	CERAMIC CHIP	0.1µF		25V
C601		1-164-004-11	CERAMIC CHIP	0.1µF	10%	25V
C602		1-126-967-11	ELECT	47µF	20%	50V
C604		1-164-182-11	CERAMIC CHIP	0.0033µF	10%	50V
C606	⚠	1-113-923-11	CERAMIC	0.0033µF	20%	250V
C607		1-136-311-51	MYLAR	0.47µF	20%	125V
			(KV-20FS12/20FV12 ONLY)			
C607		1-136-311-61	MYLAR	0.47µF	20%	300V
			(ALL EXCEPT KV-20FS12/20FV12)			
C611	⚠	1-113-923-11	CERAMIC	0.0033µF	20%	250V
C612	⚠	1-117-893-11	ELECT	470µF	20%	250V
			(KV-20FS12/20FV12 ONLY)			
C612	⚠	1-128-714-11	ELECT	330µF	20%	400V
			(ALL EXCEPT KV-20FS12/20FV12)			
C617		1-125-893-11	FILM	680PF	3%	1.5KV
C618		1-164-081-11	CERAMIC	470PF	10%	50V
C619		1-136-356-11	MYLAR	470PF	5%	50V
C620		1-104-665-11	ELECT	100µF	20%	25V

REF.NO.		PART NO.	DESCRIPTION		REMARK	
C621		1-117-214-11	CERAMIC	0.001µF	10%	2KV
C622		1-164-625-11	CERAMIC	680PF	10%	500V
C623		1-164-625-11	CERAMIC	680PF	10%	500V
C624		1-131-867-51	ELECT	100µF		160V
C625		1-135-412-51	ELECT	1000µF	20%	25V
			(ALL EXCEPT KV-21FV12/C)			
C625		1-135-573-51	ELECT	15000µF	20%	25V
			(KV-21FV12/C ONLY)			
C626		1-135-412-51	ELECT	1000µF	20%	25V
C627		1-136-189-00	MYLAR	0.1µF	10%	250V
C628		1-104-665-11	ELECT	100µF	20%	25V
C630		1-113-924-11	CERAMIC	0.0047µF	20%	250V
			(KV-20FS12/20FV12 ONLY)			
C631		1-113-924-11	CERAMIC	0.0047µF	20%	250V
			(KV-20FS12/20FV12 ONLY)			
C634		1-137-605-11	MYLAR	0.01µF	10%	250V
C635		1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C636		1-126-970-11	ELECT	330µF	20%	50V
C637		1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C638		1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C639		1-126-965-11	ELECT	22µF	20%	50V
C641		1-107-679-91	ELECT	10µF	20%	450V
C643		1-104-760-11	CERAMIC CHIP	0.047µF	10%	50V
C644		1-161-964-91	CERAMIC	0.0047µF		250V
C645		1-161-964-91	CERAMIC	0.0047µF		250V
C646		1-161-964-91	CERAMIC	0.0047µF		250V
C647		1-161-964-91	CERAMIC	0.0047µF		250V
C648		1-136-346-51	MYLAR	0.22µF	20%	125V
			(KV-20FS12/20FV12 ONLY)			
C648		1-136-346-61	MYLAR	0.22µF	20%	300V
			(ALL EXCEPT KV-20FS12/20FV12)			
C652		1-130-471-00	MYLAR	0.001µF	5%	50V
C654		1-107-636-11	ELECT	10µF	20%	160V
C655	⚠	1-136-311-51	MYLAR	0.47µF	20%	125V
			(KV-20FS12/20FV12 ONLY)			
C655	⚠	1-136-311-61	MYLAR	0.47µF	20%	300V
			(ALL EXCEPT KV-20FS12/20FV12)			
C657		1-104-664-11	ELECT	47µF	20%	25V
C658		1-135-412-51	ELECT	1000µF	20%	25V
			(ALL EXCEPT KV-21FV12/C)			
C658		1-135-573-51	ELECT	15000µF	20%	25V
			(KV-21FV12/C ONLY)			
C699		1-117-703-11	CERAMIC	0.0047µF	20%	250V
C2001		1-104-664-11	ELECT	47µF	20%	25V

CONNECTOR

REF.NO.		PART NO.	DESCRIPTION
CN403	*	1-564-505-11	PLUG, CONNECTOR 2P
			(ALL EXCEPT KV-20FV12/21FV12/C)
CN404	*	1-564-505-11	PLUG, CONNECTOR 2P
			(ALL EXCEPT KV-20FV12/21FV12/C)

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Note:

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Note:

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REF.NO.	PART NO.	DESCRIPTION	REMARK
CN406 *	1-564-507-11	PLUG, CONNECTOR 4P	
CN460	1-573-298-21	CONNECTOR, BOARD TO BOARD 20P (KV-20FV12/21FV12/C ONLY)	
CN501 *	1-580-798-11	CONNECTOR PIN (DY) 6P	
CN502 *	1-564-509-11	PLUG, CONNECTOR 6P	
CN506 *	1-564-508-11	PLUG, CONNECTOR 5P	
CN601 *	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
CN602 * ⚠	1-580-843-11	PIN, CONNECTOR (POWER)	
CN2001*	1-564-511-11	PLUG, CONNECTOR 8P	
CN2002	1-573-298-21	CONNECTOR, BOARD TO BOARD 20P	
CN2009	1-573-298-21	CONNECTOR, BOARD TO BOARD 20P	

DIODE

REF.NO.	PART NO.	DESCRIPTION	REMARK
D204	8-719-982-22	DIODE MTZJ-T-77-30D	
D208	8-719-110-17	DIODE MTZJ-T-77-10B	
D209	8-719-110-17	DIODE MTZJ-T-77-10B	
D210	8-719-110-17	DIODE MTZJ-T-77-10B	
D212	8-719-110-17	DIODE MTZJ-T-77-10B	
D213	8-719-110-17	DIODE MTZJ-T-77-10B	
D230	8-719-108-12	DIODE RD9.1EW-T1 (KV-20FV12/21FV12/C ONLY)	
D231	8-719-108-12	DIODE RD9.1EW-T1 (KV-20FV12/21FV12/C ONLY)	
D400	8-719-108-12	DIODE RD9.1EW-T1	
D401	8-719-110-08	DIODE MTZJ-T-77-8.2B	
D403	8-719-073-01	DIODE MA111-TX (ALL EXCEPT KV-20FV12/21FV12/C)	
D502	8-719-908-03	DIODE GP08DPKG23	
D503	8-719-908-03	DIODE GP08DPKG23	
D504 ⚠	8-719-945-80	DIODE ERC06-15S	
D505 ⚠	8-719-979-85	DIODE RGP15GPKG23	
D506	8-719-302-43	DIODE RGP10GPKG3	
D507 ⚠	8-719-991-33	DIODE 1SS133T-77	
D508	8-719-991-33	DIODE 1SS133T-77	
D509	8-719-921-44	DIODE MTZJ-T-77-5.1C	
D510	8-719-908-03	DIODE GP08DPKG23	
D511	8-719-302-43	DIODE RGP10GPKG23	
D513	8-719-979-85	DIODE RGP15GPKG23	
D514	8-719-979-85	DIODE RGP15GPKG23	
D516 ⚠	8-719-991-33	DIODE 1SS133T-77	
D517 ⚠	8-719-991-33	DIODE 1SS133T-77	
D518 ⚠	8-719-110-08	DIODE RD8.2ES-T1B	
D519 ⚠	8-719-302-43	DIODE EL1Z-V1	
D520 ⚠	8-719-073-01	DIODE MA111-TX	
D601	8-719-991-33	DIODE 1SS133T-77	
D602	8-719-991-33	DIODE 1SS133T-77	
D605 ⚠	8-719-510-53	DIODE D4SB60L-F	
D610	8-719-510-02	DIODE D1NS4-TA	
D611	8-719-063-70	DIODE D1NL20U-TA	
D612	8-719-110-17	DIODE MTZJ-T-77-10B	
D613	8-719-063-70	DIODE D1NL20U-TA	
D614	8-719-063-70	DIODE D1NL20U-TA	
D615	8-719-312-10	DIODE RU4AM-T3	
D616	8-719-510-37	DIODE D5LC20U	
D617	8-719-110-31	DIODE MTZJ-T-77-12C	
D618	8-719-991-33	DIODE 1SS133T-77	
D619	8-719-110-17	DIODE MTZJ-T-77-10B	
D620	8-719-510-37	DIODE D5LC20U	
D622 ⚠	8-719-077-76	DIODE D2SB60A-F04	
D623	8-719-948-45	DIODE ERA22-08TP3	
D624	8-719-991-33	DIODE 1SS133T-77	
D625	8-719-991-33	DIODE 1SS133T-77	
D626	8-719-063-70	DIODE D1NL20U-TA	
D627	8-719-110-03	DIODE MTZJ-T-77-7.5A	
D628	8-719-510-48	DIODE D1N20R-TA	
D2001	8-719-070-80	DIODE LNK0120022G (KV-20FS12/21FM12/21FE12/C ONLY)	
D2001	8-719-074-84	DIODE LNK0120022G1 (KV-20FV12/21FV12/C ONLY)	
D2001	8-719-078-12	DIODE LNK0220022G2 (KV-21FE12A ONLY)	
D2002	8-719-110-17	DIODE MTZJ-T-77-10B	
D2003	8-719-108-12	DIODE RD9.1EW-T1	
D2004	8-719-921-44	DIODE MTZJ-T-77-5.1C	
D2005	8-719-921-44	DIODE MTZJ-T-77-5.1C	

FUSE

REF.NO.	PART NO.	DESCRIPTION	REMARK
F601 ⚠	1-576-193-11	FUSE 6.3A/125V (KV-20FS12/20FV12 ONLY)	
F601 ⚠	1-532-506-51	FUSE 6.3A/250V (ALL EXCEPT KV-20FS12/20FV12)	

FERRITE BEAD

REF.NO.	PART NO.	DESCRIPTION	REMARK
FB501	1-410-397-21	FERRITE	1.1µH
FB502	1-410-397-21	FERRITE	1.1µH
FB503	1-410-397-21	FERRITE	1.1µH
FB600	1-412-911-11	FERRITE	0µH
FB601	1-412-911-11	FERRITE	0µH
FB602	1-412-911-11	FERRITE	0µH
FB603	1-412-911-11	FERRITE	0µH
FB604	1-412-911-11	FERRITE	0µH
FB605	1-412-911-11	FERRITE	0µH
FB606	1-412-911-11	FERRITE	0µH
FB609	1-412-911-11	FERRITE	0µH
FB610	1-412-911-11	FERRITE	0µH

Note:

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Note:

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REF.NO.		PART NO.	DESCRIPTION	REMARK
		IC		
IC401		8-759-490-17	IC TDA7057AQ/N2 (ALL EXCEPT KV-21FV12/C)	
IC402		8-759-573-40	IC TDA8580Q/N1 (KV-21FV12/C ONLY)	
IC405		8-759-450-93	IC NJM2521M-TE1 (ALL EXCEPT KV-20FV12/21FV12/C)	
IC406		8-759-450-93	IC NJM2521M-TE1 (KV-20FS12/21FE12/A/C ONLY)	
IC501	⚠	8-759-700-07	IC NJM2903M-TE2	
IC502		8-759-980-58	IC TDA8172	
IC601	⚠	8-749-015-60	IC STR-F6624 (KV-20FS12/20FV12 ONLY)	
IC601	⚠	8-749-013-75	IC STR-F6654 (ALL EXCEPT KV-20FS12/20FV12)	
IC602	⚠	8-749-016-47	IC EA135-F12	
IC603		8-759-198-03	IC PQ09RF21	
IC604		8-759-701-75	IC NJM7805FA	
IC2001		8-742-134-00	HYB IC SBX1981-51P	
		JACK		
J201		1-794-118-11	JACK BLOCK, PIN 3P (KV-20FS12/21FE12/A/C ONLY)	
J201		1-794-119-11	TERMINAL BLOCK, S 4P (KV-20FV12/21FV12/C ONLY)	
J201		1-794-115-11	JACK BLOCK, PIN 2P (KV-21FM12 ONLY)	
J202		1-794-267-11	JACK, PIN 3P (ALL EXCEPT KV-21FM12)	
J202		1-794-266-21	JACK, PIN 2P (KV-21FM12 ONLY)	
J205		1-794-116-11	JACK BLOCK, PIN 2P (KV-20FV12/21FV12/C ONLY)	
J401		1-568-267-21	JACK	
		CHIP CONDUCTOR		
JR001		1-216-295-91	SHORT	
JR002		1-216-295-91	SHORT (ALL EXCEPT KV-20FS12/21FE12/A/C)	
JR202		1-216-295-91	SHORT (KV-20FS12/21FE12/A/C ONLY)	
JR403		1-216-295-91	SHORT	
JR405		1-216-295-91	SHORT (KV-21FV12/C ONLY)	
JR409		1-216-295-91	SHORT (KV-20FS12/21FE12/A/C ONLY)	
JR411		1-216-295-91	SHORT (KV-20FV12/21FV12/C ONLY)	
JR412		1-216-295-91	SHORT (KV-20FS12/21FE12/A/C ONLY)	
JR430		1-216-295-91	SHORT	
JR470		1-216-295-91	SHORT (KV-21FM12 ONLY)	
JR471		1-216-295-91	SHORT (KV-21FV12/C ONLY)	
JR503		1-216-295-91	SHORT	
JR505		1-216-295-91	SHORT (ALL EXCEPT KV-21FV12/C)	

REF.NO.		PART NO.	DESCRIPTION	REMARK
		COIL		
L101		1-414-267-11	INDUCTOR	10µH
L102		1-414-273-11	INDUCTOR	100µH
L103		1-414-267-11	INDUCTOR	10µH
L501	⚠	1-409-955-11	INDUCTOR	8mH
L502		1-412-552-11	INDUCTOR	2.2mH
L503		1-406-677-11	INDUCTOR	10mH
L504		1-412-533-21	INDUCTOR	47µH
L508	⚠	1-406-981-21	INDUCTOR	470µH
L510	⚠	1-412-528-11	INDUCTOR	18µH
L603		1-412-529-11	INDUCTOR	22µH
L604		1-412-525-31	INDUCTOR	10µH
L605		1-412-529-11	INDUCTOR	22µH
		PHOTO COUPLER		
PH601	⚠	8-749-010-64	PHOTO COUPLER PC123FY2	
		IC LINK		
PS401	⚠	1-576-336-21	LINK, IC (ALL EXCEPT KV-21FV12/C)	
PS401	⚠	1-532-686-21	LINK, IC 2.7A/150V (KV-21FV12/C ONLY)	
		TRANSISTOR		
Q101		8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q410		8-729-422-27	TRANSISTOR 2SD601A-QRS-TX (KV-21FV12/C ONLY)	
Q411		8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q501		8-729-140-50	TRANSISTOR 2SC3209LK-TP	
Q502	⚠	8-729-051-69	TRANSISTOR 2SD2624	
Q503	⚠	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	(ALL EXCEPT KV-21FM12)
Q503	⚠	8-729-120-28	TRANSISTOR 2SC2412K-T-146-QR	(KV-21FM12 ONLY)
Q504		8-729-809-29	TRANSISTOR 2SC4159-E	
Q505	⚠	8-729-200-17	TRANSISTOR 2SA1091O-TPE2	
Q506	⚠	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	(ALL EXCEPT KV-21FV12/C)
Q506	⚠	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	(KV-21FV12/C ONLY)
Q507	⚠	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q604		8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q605	⚠	8-729-046-40	TRANSISTOR 2SK2663	
Q606		8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q607		8-729-922-37	TRANSISTOR 2SD2144S-TP-UVW	
Q608		8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q609		8-729-423-33	TRANSISTOR 2SC3311A-QRSTA	

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Note:

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Note:

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REF.NO.	PART NO.	DESCRIPTION	REMARK		
	RESISTOR				
R101	1-216-073-00	RES-CHIP	10K	5%	1/10W
R103	1-216-295-91	SHORT	0 (KV-21FM12 ONLY)		
R105	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R107	1-216-025-91	RES-CHIP	100	5%	1/10W
R108	1-216-025-91	RES-CHIP	100	5%	1/10W
R114	1-216-295-91	SHORT	0 (KV-21FM12 ONLY)		
R115	1-216-295-91	SHORT	0 (EXCEPT KV-21FM12)		
R204	1-216-083-00	RES-CHIP	27K	5%	1/10W
R205	1-216-689-11	RES-CHIP	39K	5%	1/10W
R206	1-216-295-91	SHORT	0 (KV-21FM12 ONLY)		
R208	1-215-899-11	METAL OXIDE	15K	5%	2W
R214	1-216-113-00	RES-CHIP	470K	5%	1/10W
			(ALL EXCEPT KV-21FM12)		
R215	1-216-113-00	RES-CHIP	470K	5%	1/10W
R235	1-216-089-91	RES-CHIP	47K	5%	1/10W
R237	1-216-033-00	RES-CHIP	220	5%	1/10W
R238	1-216-033-00	RES-CHIP	220	5%	1/10W
R239	1-216-089-91	RES-CHIP	47K	5%	1/10W
R401	1-216-080-00	RES-CHIP	20K	5%	1/10W
		(KV-21FV12/C ONLY)			
R402	1-216-073-00	RES-CHIP	10K	5%	1/10W
		(KV-21FV12/C ONLY)			
R409	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
		(KV-21FM12 ONLY)			
R421	1-249-425-11	CARBON	4.7K	5%	1/4W
R422	1-249-389-11	CARBON	4.7	5%	1/4W
R424	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
		(ALL EXCEPT KV-20FV12/21FV12/C)			
R425	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
		(ALL EXCEPT KV20FV12/21FM12/21FV12/C)			
R425	1-216-295-91	SHORT	0		
		(KV-21FM12 ONLY)			
R426	1-216-009-91	RES-CHIP	22	5%	1/10W
		(KV-21FV12/C ONLY)			
R427	1-247-815-91	CARBON	220	5%	1/4W
R428	1-216-033-00	RES-CHIP	220	5%	1/10W
R429	1-216-113-00	RES-CHIP	470K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R430	1-216-049-91	RES-CHIP	1K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R431	1-216-049-91	RES-CHIP	1K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R432	1-216-073-00	RES-CHIP	10K	5%	1/10W
		(ALL EXCEPT KV-20FV12/21FV12/C)			
R432	1-216-085-00	RES-CHIP	33K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R433	1-216-113-00	RES-CHIP	470K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R436	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
		(ALL EXCEPT KV-20FV12/21FV12/C)			

REF.NO.	PART NO.	DESCRIPTION	REMARK		
R436	1-216-073-00	RES-CHIP	10K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R437	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
		(ALL EXCEPT KV-20FV12/21FV12/C)			
R437	1-216-073-00	RES-CHIP	10K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R438	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
		(KV-20FS12/21FE12/A/C ONLY)			
R438	1-216-073-00	RES-CHIP	10K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R439	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
		(KV-20FS12/21FE12A ONLY)			
R439	1-216-073-00	RES-CHIP	10K	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R439	1-216-089-91	RES-CHIP	47K	5%	1/10W
		(KV-21FM12/21FE12/C ONLY)			
R440	1-216-097-91	RES-CHIP	100K	5%	1/10W
R441	1-216-081-00	RES-CHIP	22K	5%	1/10W
		(KV-21FV12/C ONLY)			
R442	1-216-025-91	RES-CHIP	100	5%	1/10W
		(KV-21FV12/C ONLY)			
R443	1-216-033-00	RES-CHIP	220	5%	1/10W
		(ALL EXCEPT KV-20FV12/21FV12/C)			
R444	1-216-033-00	RES-CHIP	220	5%	1/10W
		(ALL EXCEPT KV-20FV12/21FV12/C)			
R445	1-216-073-00	RES-CHIP	10K	5%	1/10W
R446	1-249-435-11	CARBON	33K	5%	1/4W
		(KV-20FV12/21FV12/C ONLY)			
R447	1-216-049-91	RES-CHIP	1K	5%	1/10W
R454	1-216-025-91	RES-CHIP	100	5%	1/10W
R501	1-247-843-11	CARBON	3.3K	5%	1/4W
R502 ⚠	1-215-892-11	METAL OXIDE	1K	5%	2W
R503 ⚠	1-249-426-11	CARBON	5.6K	5%	1/4W
R506 ⚠	1-215-886-11	METAL OXIDE	100	5%	2W
R507 ⚠	1-260-320-11	CARBON	220	5%	1/2W
R508	1-247-863-91	CARBON	22K	5%	1/4W
R509 ⚠	1-215-892-11	METAL OXIDE	1K	5%	2W
R510	1-249-411-11	CARBON	330	5%	1/4W
R513 ⚠	1-215-913-11	METAL OXIDE	220	5%	3W
R516	1-249-429-11	CARBON	10K	5%	1/4W
R517	1-249-425-11	CARBON	4.7K	5%	1/4W
R518	1-249-427-11	CARBON	6.8K	5%	1/4W
R519	1-249-427-11	CARBON	6.8K	5%	1/4W
R520 ⚠	1-215-861-00	METAL OXIDE	47	5%	1W
R521	1-249-411-11	CARBON	330	5%	1/4W
R522	1-249-415-11	CARBON	680	5%	1/4W
R523	1-216-073-00	RES-CHIP	10K	5%	1/10W
R524	1-249-429-11	CARBON	10K	5%	1/4W
R525 ⚠	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R526	1-208-814-91	METAL CHIP	22K	0.50%	1/10W

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Note:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

The components identified by ⧓ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding x-ray radiation. Should replacement be required, replace only with the value originally used.

REF.NO.		PART NO.	DESCRIPTION		REMARK	
R527		1-216-081-00	RES-CHIP	22K	5%	1/10W
R528		1-249-421-11	CARBON	2.2K	5%	1/4W
R529		1-216-105-91	RES-CHIP	220K	5%	1/10W
R530		1-216-101-00	RES-CHIP	150K	5%	1/10W
R531		1-216-085-00	RES-CHIP	33K	5%	1/10W
R532		1-215-431-00	METAL	2.7K	1%	1/4W
R533		1-215-461-00	METAL	47K	1%	1/4W
R534		1-215-455-00	METAL	27K	1%	1/4W
R535		1-249-441-11	CARBON	100K	5%	1/4W
R536	⚠	1-216-355-11	METAL OXIDE	3.3	5%	1W
R538	⚠	1-215-890-11	METAL OXIDE	470	5%	2W
R539		1-249-385-11	CARBON	2.2	5%	1/4W
R540		1-249-425-11	CARBON	4.7K	5%	1/4W
R541		1-249-429-11	CARBON	10K	5%	1/4W
R542	⚠	1-215-910-00	METAL OXIDE	68	5%	3W
R543		1-247-887-00	CARBON	220K	5%	1/4W
R544		1-260-312-11	CARBON	47	5%	1/2W
R546	⚠	1-249-377-11	CARBON	0.47	5%	1/4W
R547	⚠	1-215-892-11	METAL OXIDE	1K	5%	2W
R549	⚠	1-260-288-11	CARBON	0.47	5%	1/2W
R550	⚠	1-260-288-11	CARBON	0.47	5%	1/2W
R552	⚠	1-215-910-00	METAL OXIDE	68	5%	3W
R553	⚠	1-216-365-00	METAL OXIDE	0.47	5%	2W
R554	⚠	1-249-429-11	CARBON	10K	5%	1/4W
R555	⚠	1-247-895-91	CARBON	470K	5%	1/4W
R556	⚠	1-249-416-11	CARBON	820	5%	1/4W
R557	⚠	1-247-895-91	CARBON	470K	5%	1/4W
R558	⚠	1-249-441-11	CARBON	100K	5%	1/4W
R559	⚠	1-249-429-11	CARBON	10K	5%	1/4W
R560	⚠	1-215-902-11	METAL OXIDE	47K	5%	1W
R561	⚠	1-215-416-00	METAL	620	1%	1/4W
⧓ R562	⚠	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
R563	⚠	1-249-441-11	CARBON	100K	5%	1/4W
R565	⚠	1-249-429-11	CARBON	10K	5%	1/4W
R566	⚠	1-216-073-00	RES-CHIP	10K	5%	1/10W
R567	⚠	1-216-073-00	RES-CHIP	10K	5%	1/10W
R568	⚠	1-215-882-00	METAL OXIDE	22	5%	2W
R571		1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R572		1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R573		1-216-109-00	RES-CHIP	330K	5%	1/10W
R601	⚠	1-219-513-11	CARBON	4.7M	5%	1/2W
			(KV-20FS12/20FV12 ONLY)			
R602	⚠	1-249-389-11	CARBON	4.7	5%	1/4W
R603		1-215-485-00	METAL	470K	1%	1/4W
R605	⚠	1-205-998-11	CEMENTED	1	5%	10W
			(KV-20FS12/20FV12 ONLY)			
R605	⚠	1-202-968-11	CEMENTED	1.2	5%	10W
			(ALL EXCEPT KV-20FS12/20FV12)			
R606		1-205-998-11	CEMENTED	1	5%	10W
			(KV-20FS12/20FV12 ONLY)			
R606		1-202-968-11	CEMENTED	1.2	5%	10W
			(ALL EXCEPT KV-20FS12/20FV12)			
R607		1-215-859-00	METAL OXIDE	22	5%	1W
R608		1-240-205-11	CARBON	22M	5%	1/2W
R609		1-216-049-91	RES-CHIP	1K	5%	1/10W
R610		1-216-073-00	RES-CHIP	10K	5%	1/10W
R611		1-216-089-91	RES-CHIP	47K	5%	1/10W
R612		1-216-045-00	RES-CHIP	680	5%	1/10W
R613	⚠	1-219-512-11	CARBON	2.2M	5%	1/2W
R614		1-249-413-11	CARBON	470	5%	1/4W
R615	⚠	1-218-265-11	METAL	8.2M	5%	1W
			(ALL EXCEPT KV-20FS12/20FV12)			
R616	⚠	1-260-302-51	CARBON	6.8	5%	1/2W
R617		1-216-009-91	RES-CHIP	22	5%	1/10W
R621		1-202-968-11	CEMENTED	1.2	5%	10W
			(ALL EXCEPT KV-20FS12/20FV12)			
R626	⚠	1-220-926-11	FUSIBLE	0.47	10%	1/2W
R627		1-215-483-00	METAL	390K	1%	1/4W
			(KV-20FS12/20FV12 ONLY)			
R627		1-215-479-00	METAL	270K	1%	1/4W
			(ALL EXCEPT KV-20FS12/20FV12)			
R630		1-249-421-11	CARBON	2.2K	5%	1/4W
R632	⚠	1-216-361-21	METAL OXIDE	0.22	5%	2W
R633		1-249-415-11	CARBON	680	5%	1/4W
R634		1-216-073-00	RES-CHIP	10K	5%	1/10W
R635		1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R637		1-216-485-11	METAL OXIDE	5.6K	5%	3W
			(ALL EXCEPT KV-20FS12/20FV12)			
R638		1-249-399-11	CARBON	33	5%	1/4W
			(KV-20FS12/20FV12 ONLY)			
R638		1-249-402-11	CARBON	56	5%	1/4W
			(ALL EXCEPT KV-20FS12/20FV12)			
R639		1-249-421-11	CARBON	2.2K	5%	1/4W
R640		1-249-417-11	CARBON	1K	5%	1/4W
R641	⚠	1-216-363-00	METAL OXIDE	0.33	5%	2W
R642		1-216-089-91	RES-CHIP	47K	5%	1/10W
R643		1-249-419-11	CARBON	1.5K	5%	1/4W
R644		1-247-843-11	CARBON	3.3K	5%	1/4W
R645		1-215-898-11	METAL OXIDE	10K	5%	2W
R646		1-249-419-11	CARBON	1.5K	5%	1/4W
R648		1-215-908-00	METAL OXIDE	33	5%	3W
R650		1-216-387-11	METAL OXIDE	0.68	5%	3W
R653		1-216-049-91	RES-CHIP	1K	5%	1/10W
R655		1-216-049-91	RES-CHIP	1K	5%	1/10W
R656		1-249-429-11	CARBON	10K	5%	1/4W
R658		1-216-387-11	METAL OXIDE	0.68	5%	3W
R659		1-215-857-11	METAL OXIDE	10	5%	1W
R660		1-215-924-00	METAL OXIDE	15K	5%	3W

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REF.NO.	PART NO.	DESCRIPTION				REMARK
		(KV-20FS12/20FV12 ONLY)				
R660	1-216-485-11	METAL OXIDE	5.6K	5%	3W	
		(ALL EXCEPT KV-20FS12/20FV12)				
R661	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	
R662 ⚠	1-216-485-11	METAL OXIDE	5.6K	5%	3W	
		(ALL EXCEPT KV-20FS12/20FV12)				
R663	1-216-081-00	RES-CHIP	22K	5%	1/10W	
R2001	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	
R2002	1-216-053-00	RES-CHIP	1.5K	5%	1/10W	
R2003	1-249-425-11	CARBON	4.7K	5%	1/4W	
R2004	1-216-069-00	RES-CHIP	6.8K	5%	1/10W	
R2005	1-216-295-91	SHORT				
		(ALL EXCEPT KV-20FV12/21FV12/C)				
R2007	1-249-413-11	CARBON	470	5%	1/4W	
		(KV-21FE12A ONLY)				
R2011	1-249-415-11	CARBON	680	5%	1/4W	
R2012	1-249-416-11	CARBON	820	5%	1/4W	
R2013	1-249-421-11	CARBON	2.2K	5%	1/4W	
R2014	1-249-427-11	CARBON	6.8K	5%	1/4W	

RELAY

REF.NO.	PART NO.	DESCRIPTION
RY601 ⚠	1-755-198-11	RELAY
RY602 ⚠	1-755-266-11	RELAY, AC POWER

SWITCH

REF.NO.	PART NO.	DESCRIPTION
S2001	1-692-431-21	SWITCH, TACTILE
S2002	1-692-431-21	SWITCH, TACTILE
S2003	1-692-431-21	SWITCH, TACTILE
S2004	1-692-431-21	SWITCH, TACTILE
S2005	1-692-431-21	SWITCH, TACTILE
S2006	1-692-431-21	SWITCH, TACTILE
S2007	1-762-816-11	SWITCH, TACTILE
S2008	1-762-816-11	SWITCH, TACTILE

SWITCH

REF.NO.	PART NO.	DESCRIPTION
SW502	1-572-707-11	SWITCH, LEVER

TRANSFORMER

REF.NO.	PART NO.	DESCRIPTION
T501 ⚠	1-435-374-11	TRANSFORMER, FERRITE (HDT)
T504 ⚠	1-435-079-11	TRANSFORMER, HORIZONTAL LINEAR
T505 ⚠	1-453-316-21	FBT ASSY NX-1748//X4A4
T602 ⚠	1-431-419-11	TRANSFORMER, LINE FILTER
		(KV-20FS12/20FV12 ONLY)
T602 ⚠	1-426-717-11	TRANSFORMER, LINE FILTER (LFT)
		(ALL EXCEPT KV-20FS12/20FV12)
T603 ⚠	1-433-806-11	TRANSFORMER, REGULATOR
		(KV-20FS12/20FV12 ONLY)
T603 ⚠	1-433-807-11	TRANSFORMER, REGULATOR
		(ALL EXCEPT KV-20FS12/20FV12)
T604 ⚠	1-431-852-11	TRANSFORMER, CONVERTER (SRT)

THERMISTOR

REF.NO.	PART NO.	DESCRIPTION
TH601 ⚠	1-803-586-11	THERMISTOR, NTC

THERMISTOR

REF.NO.	PART NO.	DESCRIPTION
THP601 ⚠	1-809-539-11	THERMISTOR, POSITIVE
		(KV-20FS12/20FV12 ONLY)
THP601 ⚠	1-803-540-11	THERMISTOR (ALL EXCEPT KV-20FS12/20FV12)

TUNER

REF.NO.	PART NO.	DESCRIPTION
TU101 ⚠	8-598-542-00	TUNER, FSS BTF-WA412 (KV-21FE12A ONLY)
TU101 ⚠	8-598-431-30	TUNER, FSS BTF-WA411
		(ALL EXCEPT KV-21FM12/21FE12A)
TU101 ⚠	8-598-501-00	TUNER, FSS BTF-FA402 (KV-21FM12 ONLY)

VARISTOR

REF.NO.	PART NO.	DESCRIPTION
VDR601 ⚠	1-803-585-11	VARISTOR ENE271D-10A
		(KV-20FS12/20FV12 ONLY)
VDR601 ⚠	1-803-967-11	VARISTOR (ENE621D-14A)
		(ALL EXCEPT KV-20FS12/20FV12)

CB

* **A-1332-035-A CB (VAR) MOUNTED PC BOARD**

4-382-854-11 SCREW (M3X10), P, SW (+)

CAPACITOR

REF.NO.	PART NO.	DESCRIPTION			
C701	1-104-664-11	ELECT	47μF	20%	25V
C702	1-136-165-00	MYLAR	0.1μF	5%	50V
C703	1-104-664-11	ELECT	47μF	20%	25V
C704	1-107-649-11	ELECT	2.2μF	20%	250V
C705	1-107-652-11	ELECT	10μF	20%	250V
C707	1-162-114-00	CERAMIC	0.0047μF		2KV

Note:

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Note:

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CB HZ K

REF.NO.	PART NO.	DESCRIPTION		REMARK	
C708	1-136-165-00	MYLAR	0.1µF	5%	50V
C709	1-126-934-11	ELECT	220µF	20%	16V
C710	1-126-964-11	ELECT	10µF	20%	50V

CONNECTOR

CN701 *	1-564-506-11	PLUG, CONNECTOR 3P
CN702	1-695-915-11	TAB (CONTACT)
CN704	1-784-281-11	HOUSING, CONNECTOR 1P
CN705 *	1-564-512-11	PLUG, CONNECTOR 9P
CN706 *	1-564-509-11	PLUG, CONNECTOR 6P

DIODE

D701	8-719-901-83	DIODE 1SS83TD
D702	8-719-901-83	DIODE 1SS83TD
D703	8-719-901-83	DIODE 1SS83TD
D704	8-719-302-43	DIODE RGP10GPKG23

IC

IC701	8-759-803-42	IC LA6500-FA
IC702	8-759-562-43	IC TDA6108JF/N1B

JACK

J701 ⚠	1-451-470-21	SOCKET, CRT

COIL

L701	1-408-613-31	INDUCTOR	68µH

TRANSISTOR

Q700	8-729-423-33	TRANSISTOR 2SC3311A-QRSTA
Q701	8-729-423-33	TRANSISTOR 2SC3311A-QRSTA

RESISTOR

R700	1-247-863-91	CARBON	22K	5%	1/4W
R701	1-249-429-11	CARBON	10K	5%	1/4W
R702	1-247-815-91	CARBON	220	5%	1/4W
R703	1-247-807-31	CARBON	100	5%	1/4W
R704	1-249-421-11	CARBON	2.2K	5%	1/4W
R705	1-216-073-00	RES-CHIP	10K	5%	1/10W
R706	1-249-381-11	CARBON	1	5%	1/4W
R707	1-249-383-11	CARBON	1.5	5%	1/4W
R708	1-247-807-31	CARBON	100	5%	1/4W
R709	1-247-807-31	CARBON	100	5%	1/4W
R710	1-247-807-31	CARBON	100	5%	1/4W
R711	1-260-099-11	CARBON	1K	5%	1/2W
R712	1-260-099-11	CARBON	1K	5%	1/2W
R713	1-260-099-11	CARBON	1K	5%	1/2W
R714	1-260-087-11	CARBON	100	5%	1/2W
R715	1-260-132-11	CARBON	560K	5%	1/2W
R716	1-260-123-11	CARBON	100K	5%	1/2W
R718	1-216-375-00	METAL OXIDE	3.3	5%	2W
R719	1-215-888-00	METAL OXIDE	220	5%	2W
R720	1-249-421-11	CARBON	2.2K	5%	1/4W
R721	1-249-421-11	CARBON	2.2K	5%	1/4W

VARIABLE RESISTOR

RV701	1-241-656-11	RES, ADJ, METAL FILM	110M

HZ

*** A-1372-117-A MOUNTED PWB, HZ (KV-21FE12A ONLY)**

CONNECTOR

CN901 *	1-580-843-11	PIN, CONNECTOR (POWER)
CN902 *	1-580-843-11	PIN, CONNECTOR (POWER)

SWITCH

S901 ⚠	1-571-433-21	SWITCH, PUSH (AC POWER)

K

*** A-1380-627-A K (VAR) MOUNTED PC BOARD (KV20FV12/21FV12/C ONLY)**

CAPACITOR

C201	1-126-963-11	ELECT	4.7µF	20.00%	50V
C202	1-126-963-11	ELECT	4.7µF	20.00%	50V
C404	1-164-182-11	CERAMIC CHIP	0.0033µF	10.00%	50V
C405	1-163-034-00	CERAMIC CHIP	0.033µF		50V
C406	1-163-011-11	CERAMIC CHIP	0.0015µF	10.00%	50V
C407	1-164-222-11	CERAMIC CHIP	0.22µF		25V
C408	1-164-222-11	CERAMIC CHIP	0.22µF		25V
C409	1-163-011-11	CERAMIC CHIP	0.0015µF	10.00%	50V

K MB

Note:

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Note:

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REF.NO.	PART NO.	DESCRIPTION	REMARK		
C410	1-163-034-00	CERAMIC CHIP	0.033µF		50V
C411	1-164-182-11	CERAMIC CHIP	0.0033µF	10.00%	50V
C412	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C413	1-126-963-11	ELECT	4.7µF	20.00%	50V
C414	1-126-963-11	ELECT	4.7µF	20.00%	50V
C415	1-126-963-11	ELECT	4.7µF	20.00%	50V
C416	1-126-963-11	ELECT	4.7µF	20.00%	50V
C417	1-126-963-11	ELECT	4.7µF	20.00%	50V
C418	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C419	1-164-346-11	CERAMIC CHIP	1µF		16V
C422	1-126-963-11	ELECT	4.7µF	20.00%	50V
C423	1-126-963-11	ELECT	4.7µF	20.00%	50V
C450	1-126-963-11	ELECT	4.7µF	20.00%	50V
C451	1-126-963-11	ELECT	4.7µF	20.00%	50V
C458	1-126-963-11	ELECT	4.7µF	20.00%	50V
C459	1-126-963-11	ELECT	4.7µF	20.00%	50V
C460	1-126-965-11	ELECT	22µF	20.00%	50V

CONNECTOR

CN450	1-573-301-21	CONNECTOR, BOARD TO BOARD 20P			

IC

IC404	8-759-658-01	IC NJW1130G			

CHIP CONDUCTOR

JR402	1-216-295-91	SHORT			
JR405	1-216-295-91	SHORT			
JR406	1-216-295-91	SHORT			
JR407	1-216-295-91	SHORT			
JR408	1-216-295-91	SHORT			
JR420	1-216-295-91	SHORT			
JR421	1-216-295-91	SHORT			
JR422	1-216-295-91	SHORT			
JR426	1-216-295-91	SHORT			
JR427	1-216-295-91	SHORT			
JR428	1-216-295-91	SHORT			
JR429	1-216-295-91	SHORT			
JR450	1-216-295-91	SHORT			
JR451	1-216-295-91	SHORT			
JR452	1-216-295-91	SHORT			

RESISTOR

R403	1-216-025-91	RES-CHIP	100	5%	1/10W
R404	1-216-025-91	RES-CHIP	100	5%	1/10W
R405	1-216-025-91	RES-CHIP	100	5%	1/10W
R406	1-216-025-91	RES-CHIP	100	5%	1/10W
R407	1-216-025-91	RES-CHIP	100	5%	1/10W
R408	1-216-025-91	RES-CHIP	100	5%	1/10W
R409	1-216-025-91	RES-CHIP	100	5%	1/10W
R410	1-216-025-91	RES-CHIP	100	5%	1/10W
R450	1-216-025-91	RES-CHIP	100	5%	1/10W
R451	1-216-025-91	RES-CHIP	100	5%	1/10W

MB

*	**A-1304-183-A**	**MB (VAR) MOUNTED PC BOARD**	
		(KV-20FS12/20FE12/C/21FM12 ONLY)	
*	**A-1304-188-A**	**MB (VAR) MOUNTED PC BOARD**	
		(KV 20FV12/21FV12/C ONLY)	
*	**A-1304-194-A**	**MB (VAR) MOUNTED PC BOARD**	
		(KV-21FE12A ONLY)	
*	**A-1304-201-A**	**MB (VAR) MOUNTED PC BOARD**	
		(KV-21FM12 ONLY)	

CAPACITOR

C1002	1-107-698-11	ELECT	10µF	20%	25V
		(KV-21FV12/21FV12/C ONLY)			
C1005	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1008	1-126-964-11	ELECT	10µF	20%	50V
C1010	1-163-035-00	CERAMIC CHIP	0.047µF		50V
C1011	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1012	1-126-960-11	ELECT	1µF	20%	50V
C1013	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1014	1-130-495-00	MYLAR	0.1µF	5%	50V
C1015	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C1016	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C1018	1-126-960-11	ELECT	1µF	20%	50V
C1019	1-104-664-11	ELECT	47µF	20%	25V
C1020	1-164-161-11	CERAMIC CHIP	0.0022µF	10%	50V
C1021	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1022	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C1023	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1024	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1026	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1027	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C1028	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1029	1-164-161-11	CERAMIC CHIP	0.0022µF	10%	50V
C1030	1-115-566-11	CERAMIC CHIP	4.7µF	10.00%	10V
		(KV-20FS12/21FE12/A/C ONLY)			
C1031	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1032	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C1034	1-163-259-91	CERAMIC CHIP	220PF	5%	50V

Note:

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Note:

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MB

REF.NO.	PART NO.	DESCRIPTION	REMARK		
C1035	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C1036	1-126-963-11	ELECT	4.7µF	20%	50V
C1037	1-163-010-11	CERAMIC CHIP	0.0012µF	10%	50V
C1038	1-163-010-11	CERAMIC CHIP	0.0012µF	10%	50V
C1039	1-163-010-11	CERAMIC CHIP	0.0012µF	10%	50V
C1040	1-163-010-11	CERAMIC CHIP	0.0012µF	10%	50V
C1041	1-126-935-11	ELECT	470µF	20%	16V
C1042	1-164-161-11	CERAMIC CHIP	0.0022µF	10%	50V
C1043	1-163-809-11	CERAMIC CHIP	0.047µF	10%	25V
C1048	1-137-194-81	MYLAR	0.47µF	5%	50V
C1049	1-163-017-00	CERAMIC CHIP	0.0047µF	10%	50V
C1050	1-163-037-11	CERAMIC CHIP	0.022µF	10%	50V
C1053	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C1055	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C1056	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1058	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1060	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1066	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1068	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1071	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1072	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1073	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1074	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C1075	1-126-935-11	ELECT	470µF	20%	16V
C1076	1-126-959-11	ELECT	0.47µF	20%	50V
C1077	1-126-964-11	ELECT	10µF	20%	50V
C1099	1-163-009-11	CERAMIC CHIP	0.001µF	10%	50V
C1304	1-126-959-11	ELECT	0.47µF	20%	50V
C1305	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1306	1-126-933-11	ELECT	100µF	20%	16V
C1307	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1308	1-126-933-11	ELECT	100µF	20%	16V
C1309	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1310	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1311	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C1313	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1315	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1320	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1321	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1322	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1323	1-126-933-11	ELECT	100µF	20%	16V
C1324	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1325	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C1326	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1327	1-126-933-11	ELECT	100µF	20%	16V
C1328	1-163-227-11	CERAMIC CHIP	10PF	0.50PF	50V
C1329	1-163-010-11	CERAMIC CHIP	0.0012µF	10%	50V
C1330	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C1331	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V

REF.NO.	PART NO.	DESCRIPTION	REMARK		
C1332	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1334	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1335	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1336	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1339	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1340	1-126-963-11	ELECT	4.7µF	20%	50V
C1341	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1342	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1343	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C1344	1-126-935-11	ELECT	470µF	20%	16V
C1345	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1349	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1350	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
C1351	1-126-963-11	ELECT	4.7µF	20%	50V
C1352	1-104-664-11	ELECT	47µF	20%	25V
C1353	1-126-964-11	ELECT	10µF	20%	50V
C1354	1-126-959-11	ELECT	0.47µF	20%	50V
		(ALL EXCEPT KV-21FE12A)			
C1354	1-126-957-11	ELECT	0.22µF	20.00%	50V
		(KV-21FE12A ONLY)			
C1355	1-126-767-11	ELECT	1000µF	20%	16V
C1356	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
		(ALL EXCEPT KV-21FE12A)			
C1356	1-163-259-91	CERAMIC CHIP	220PF	5.00%	50V
		(KV-21FE12A ONLY)			
C1357	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C1358	1-126-963-11	ELECT	4.7µF	20%	50V
C1359	1-126-964-11	ELECT	10µF	20%	50V
C1361	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C1363	1-163-233-11	CERAMIC CHIP	18PF	5.00%	50V
		(KV-21FE12A ONLY)			
C1364	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C1365	1-163-233-11	CERAMIC CHIP	18PF	5.00%	50V
		(KV-21FE12A ONLY)			
C1366	1-126-964-11	ELECT	10µF	20%	50V
C1367	1-126-964-11	ELECT	10µF	20%	50V
		(KV-20FV12/21FV12/C ONLY)			
C1375	1-163-034-00	CERAMIC CHIP	0.033µF		50V
C1376	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C1377	1-126-960-11	ELECT	1µF	20%	50V
C1378	1-163-038-91	CERAMIC CHIP	0.1µF	25V	
C1379	1-163-021-91	CERAMIC CHIP	0.01µF	10%	50V
		(ALL EXCEPT KV-21FE12A)			
C1379	1-163-017-00	CERAMIC CHIP	0.0047µF	10.00%	
		(KV-21FE12A ONLY)			
C1380	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C1381	1-163-038-91	CERAMIC CHIP	0.1µF		25V
C1382	1-126-964-11	ELECT	10µF	20%	50V
C1385	1-126-964-11	ELECT	10µF	20%	50V
C1386	1-163-038-91	CERAMIC CHIP	0.1µF		25V

MB

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REF.NO.	PART NO.	DESCRIPTION			REMARK
C1387	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C1389	1-163-038-91	CERAMIC CHIP	0.1µF		25V
		(KV-20FV12/21FV12/C ONLY)			
C1392	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C1394	1-104-664-11	ELECT	47µF	20%	25V
C1399	1-163-243-11	CERAMIC CHIP	47PF	5%	50V

CONNECTOR

CN1001 *	1-564-511-11	PLUG, CONNECTOR 8P	
CN1002 *	1-560-124-00	PLUG, CONNECTOR (2.5MM) 4P	
CN1003	1-573-301-21	CONNECTOR, BOARD TO 20P	
CN1004	1-573-301-21	CONNECTOR, BOARD TO 20P	

DIODE

D1001	8-719-921-44	DIODE MTZJ-T-77-5.1C
D1003	8-719-976-99	DIODE UDZ-TE-17-5.1B
D1005	8-719-109-89	DIODE MTZJ-T-77-5.6C
D1006	8-719-073-01	DIODE MA111-TX
		(KV-20FS12/21FE12/A/C ONLY)
D1010	8-719-977-22	DIODE UDZ-TE-17-9.1B
D1011	8-719-073-01	DIODE MA111-TX
D1012	8-719-073-01	DIODE MA111-TX
D1013	8-719-977-22	DIODE UDZ-TE-17-9.1B
D1014	8-719-073-01	DIODE MA111-TX
D1301	8-719-914-44	DIODE DAP202K-T-146
D1310	8-719-976-99	DIODE UDZ-TE-17-5.1B

FERRITE BEAD

FB1301	1-412-911-11	FERRITE	0µH
FB1302	1-412-911-11	FERRITE	0µH

FILTER

FL1301	1-239-847-11	FILTER, LOW PASS
FL1302	1-239-847-11	FILTER, LOW PASS
FL1303	1-239-847-11	FILTER, LOW PASS

IC

IC1001	8-759-658-03	IC M37273MF-258SP
IC1002	8-759-353-00	IC NJM2534M(TE2)
		(KV-20FV12/21FV12/C ONLY)
IC1003	8-759-527-77	IC M24C16-MN6T
IC1301 ⚠	8-752-092-17	IC CXA2131AS (ALL EXCEPT KV-21FE12A)
IC1301 ⚠	8-752-090-40	IC CXA2135S (KV-21FE12A ONLY)
IC1302	8-759-655-75	IC TC90A49P
IC1304	8-759-353-00	IC NJM2534M(TE2)
IC1305	8-759-658-02	IC BA3993F

CHIP CONDUCTOR

JR0002	1-216-295-91	SHORT
JR1000	1-216-295-91	SHORT
JR1001	1-216-295-91	SHORT
JR1002	1-216-295-91	SHORT
JR1003	1-216-295-91	SHORT
JR1004	1-216-295-91	SHORT
JR1005	1-216-295-91	SHORT
JR1006	1-216-295-91	SHORT
JR1007	1-216-295-91	SHORT
JR1008	1-216-295-91	SHORT
JR1009	1-216-295-91	SHORT
JR1010	1-216-295-91	SHORT
JR1011	1-216-295-91	SHORT
JR1012	1-216-295-91	SHORT
JR1013	1-216-295-91	SHORT
JR1014	1-216-295-91	SHORT
JR1015	1-216-295-91	SHORT
JR1016	1-216-295-91	SHORT
JR1017	1-216-295-91	SHORT
JR1018	1-216-295-91	SHORT
JR1083	1-216-295-91	SHORT (EXCEPT KV-20FV12/21FV12/C/21FE12A)
JR1300	1-216-295-91	SHORT
JR1301	1-216-295-91	SHORT
JR1302	1-216-295-91	SHORT
JR1303	1-216-295-91	SHORT
JR1304	1-216-295-91	SHORT
JR1305	1-216-295-91	SHORT
JR1306	1-216-295-91	SHORT
JR1307	1-216-295-91	SHORT
JR1308	1-216-295-91	SHORT
JR1309	1-216-295-91	SHORT
JR1310	1-216-295-91	SHORT
JR1311	1-216-295-91	SHORT
JR1312	1-216-295-91	SHORT
JR1313	1-216-295-91	SHORT
JR1314	1-216-295-91	SHORT
JR1315	1-216-295-91	SHORT
JR1316	1-216-295-91	SHORT
JR1317	1-216-295-91	SHORT
JR1318	1-216-295-91	SHORT
JR1319	1-216-295-91	SHORT
JR1320	1-216-295-91	SHORT
JR1321	1-216-295-91	SHORT
JR1322	1-216-295-91	SHORT
JR1323	1-216-295-91	SHORT

Note:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

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MB

REF.NO.	PART NO.	DESCRIPTION	REMARK
JR1324	1-216-295-91	SHORT	
JR1325	1-216-295-91	SHORT	
	COIL		
L1001	1-414-273-11	INDUCTOR	100µH
L1003	1-414-273-11	INDUCTOR	100µH
L1004	1-410-463-11	INDUCTOR	2.7µH
L1302	1-414-267-11	INDUCTOR	10µH
L1303	1-414-267-11	INDUCTOR	10µH
L1304	1-414-267-11	INDUCTOR	10µH
L1305	1-414-267-11	INDUCTOR	10µH
L1310	1-414-267-11	INDUCTOR	10µH
L1311	1-414-271-11	INDUCTOR	47µH
L1315	1-414-267-11	INDUCTOR	10µH
	TRANSISTOR		
Q1001	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1002	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1003	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q1009	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1010	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX (ALL EXCEPT KV-20FS12/21FE12/C)	
Q1010	8-729-120-28	TRANSISTOR 2SC2412K-T-146-QR (KV-20FS12/21FE12/C ONLY)	
Q1011	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q1301	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q1302	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1306	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q1307	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1308	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1310	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q1311	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q1312	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1313	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1315	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1316	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1317	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1325	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q1326	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q1327	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q1328	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1329	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1330	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q1331	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1332	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1336	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q1350	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q1354	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	

REF.NO.	PART NO.	DESCRIPTION			REMARK
	RESISTOR				
R556	1-216-295-91	SHORT			
R1001	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1016	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1017	1-216-025-91	RES-CHIP	100	5%	1/10W
R1018	1-249-429-11	CARBON	10K	5%	1/4W
R1019	1-216-045-00	RES-CHIP	680	5%	1/10W
R1020	1-216-097-91	RES-CHIP	100K	5%	1/10W
R1021	1-216-121-91	RES-CHIP	1M	5%	1/10W
R1022	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1023	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1024	1-216-033-00	RES-CHIP	220	5%	1/10W
R1025	1-208-814-91	METAL CHIP	22K	1%	1/10W
R1026	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1027	1-216-041-00	RES-CHIP	470	5%	1/10W
R1028	1-216-045-00	RES-CHIP	680	5%	1/10W
R1029	1-216-113-00	RES-CHIP	470K	5%	1/10W
R1030	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1031	1-216-041-00	RES-CHIP	470	5%	1/10W
R1032	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1033	1-216-081-00	RES-CHIP	22K	5%	1/10W
R1034	1-216-043-91	RES-CHIP	560	5%	1/10W
R1035	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1036	1-216-033-00	RES-CHIP	220	5%	1/10W
R1037	1-216-033-00	RES-CHIP	220	5%	1/10W
R1038	1-216-025-91	RES-CHIP	100	5%	1/10W
R1040	1-216-033-00	RES-CHIP	220	5%	1/10W
R1041	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1042	1-249-413-11	CARBON (ALL EXCEPT KV-21FM12/21FE12A)	470	5%	1/4W
R1042	1-249-414-11	CARBON (KV-21FM12 ONLY)	560	5%	1/4W
R1043	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R1044	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1045	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1046	1-249-425-11	CARBON	4.7K	5%	1/4W
R1047	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1048	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1049	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1050	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1052	1-216-033-00	RES-CHIP	220	5%	1/10W
R1053	1-216-033-00	RES-CHIP	220	5%	1/10W
R1054	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1055	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1056	1-216-081-00	RES-CHIP	22K	5%	1/10W
R1057	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1058	1-216-635-11	METAL CHIP	220	1%	1/10W
R1059	1-247-815-91	CARBON	220	5%	1/4W
R1060	1-216-635-11	METAL CHIP	220	1%	1/10W

MB

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REF.NO.	PART NO.	DESCRIPTION		REMARK	
R1061	1-247-815-91	CARBON	220	5%	1/4W
R1062	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1063	1-216-033-00	RES-CHIP	220	5%	1/10W
R1064	1-216-025-91	RES-CHIP	100	5%	1/10W
R1065	1-216-033-00	RES-CHIP	220	5%	1/10W
R1066	1-216-033-00	RES-CHIP	220	5%	1/10W
R1067	1-216-033-00	RES-CHIP	220	5%	1/10W
R1068	1-216-025-91	RES-CHIP	100	5%	1/10W
R1069	1-216-033-00	RES-CHIP	220	5%	1/10W
R1070	1-216-033-00	RES-CHIP	220	5%	1/10W
R1071	1-208-806-11	METAL CHIP	10K	1%	1/10W
R1072	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1073	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1074	1-216-355-11	METAL OXIDE	3.3	5%	1W
R1075	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1076	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1077	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1078	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1079	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R1080	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R1081	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R1082	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1084	1-216-045-00	RES-CHIP	680	5%	1/10W
R1085	1-216-045-00	RES-CHIP	680	5%	1/10W
R1086	1-216-045-00	RES-CHIP	680	5%	1/10W
R1087	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R1088	1-216-295-91	SHORT			
R1090	1-216-033-00	RES-CHIP	220	5%	1/10W
R1095	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
		(ALL EXCEPT KV-20FV12/21FV12/C)			
R1098	1-216-033-00	RES-CHIP	220	5%	1/10W
R1099	1-208-798-11	METAL CHIP	4.7K	1%	1/10W
R1103	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1104	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1105	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1106	1-216-085-00	RES-CHIP	33K	5%	1/10W
		(KV-20FS12/21FE12/A/C ONLY)			
R1108	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1109	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1110	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R1111	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1300	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1301	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R1302	1-216-041-00	RES-CHIP	470	5%	1/10W
R1303	1-216-025-91	RES-CHIP	100	5%	1/10W
R1304	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1306	1-216-033-00	RES-CHIP	220	5%	1/10W
R1308	1-216-033-00	RES-CHIP	220	5%	1/10W
R1310	1-216-025-91	RES-CHIP	100	5%	1/10W

REF.NO.	PART NO.	DESCRIPTION		REMARK	
R1311	1-216-047-91	RES-CHIP	820	5%	1/10W
R1312	1-208-806-11	METAL CHIP	10K	1%	1/10W
R1313	1-216-033-00	RES-CHIP	220	5%	1/10W
R1314	1-216-022-00	RES-CHIP	75	5%	1/10W
R1315	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R1316	1-216-295-91	SHORT			
R1317	1-216-022-00	RES-CHIP	75	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R1318	1-216-022-00	RES-CHIP	75	5%	1/10W
		(KV-20FV12/21FV12/C ONLY)			
R1319	1-216-022-00	RES-CHIP	75	5%	1/10W
R1320	1-216-025-91	RES-CHIP	100	5%	1/10W
R1322	1-216-081-00	RES-CHIP	22K	5%	1/10W
R1323	1-216-025-91	RES-CHIP	100	5%	1/10W
R1325	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R1326	1-216-043-91	RES-CHIP	560	5%	1/10W
R1327	1-216-025-91	RES-CHIP	100	5%	1/10W
R1328	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R1329	1-216-091-00	RES-CHIP	56K	5%	1/10W
R1330	1-216-081-00	RES-CHIP	22K	5%	1/10W
R1331	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1332	1-216-043-91	RES-CHIP	560	5%	1/10W
R1333	1-216-033-00	RES-CHIP	220	5%	1/10W
R1334	1-216-025-91	RES-CHIP	100	5%	1/10W
R1335	1-216-025-91	RES-CHIP	100	5%	1/10W
R1336	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R1338	1-216-091-00	RES-CHIP	56K	5%	1/10W
R1342	1-216-025-91	RES-CHIP	100	5%	1/10W
R1344	1-216-025-91	RES-CHIP	100	5%	1/10W
R1345	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1346	1-216-033-00	RES-CHIP	220	5%	1/10W
R1347	1-216-025-91	RES-CHIP	100	5%	1/10W
R1348	1-216-025-91	RES-CHIP	100	5%	1/10W
R1349	1-216-295-91	SHORT	0		
		(KV-21FE12A ONLY)			
R1350	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1351	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R1352	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1355	1-216-025-91	RES-CHIP	100	5%	1/10W
R1356	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R1357	1-216-043-91	RES-CHIP	560	5%	1/10W
R1358	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R1359	1-216-025-91	RES-CHIP	100	5%	1/10W
R1360	1-216-041-00	RES-CHIP	470	5%	1/10W
R1361	1-216-295-91	SHORT			
R1362	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1363	1-216-043-91	RES-CHIP	560	5%	1/10W
R1364	1-216-025-91	RES-CHIP	100	5%	1/10W
R1365	1-216-025-91	RES-CHIP	100	5%	1/10W

Note:

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Note:

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MB VB

REF.NO.	PART NO.	DESCRIPTION			REMARK
R1366	1-216-025-91	RES-CHIP	100	5%	1/10W
R1367	1-216-025-91	RES-CHIP	100	5%	1/10W
R1368	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
		(ALL EXCEPT KV-20FV12/21FV12/C)			
R1369	1-259-884-11	CARBON	4.7M	5%	1/4W
		(KV-21FE12A ONLY)			
R1371	1-216-295-91	SHORT (KV-21FE12A ONLY)			
R1372	1-216-295-91	SHORT			
R1373	1-216-295-91	SHORT (KV-21FE12A ONLY)			
R1374	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1375	1-216-295-91	SHORT			
R1376	1-216-295-91	SHORT			
R1378	1-216-295-91	SHORT			
R1379	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R1380	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R1381	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R1382	1-216-097-91	RES-CHIP	100K	5%	1/10W
R1383	1-216-097-91	RES-CHIP	100K	5%	1/10W
R1384	1-216-097-91	RES-CHIP	100K	5%	1/10W
R1385	1-216-113-00	RES-CHIP	470K	5%	1/10W
		(ALL EXCEPT KV-21FE12A)			
R1386	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1387	1-216-095-00	RES-CHIP	82K	5%	1/10W
		(ALL EXCEPT KV-21FE12A)			
R1387	1-216-085-00	RES-CHIP	33K	5%	1/10W
		(KV-21FE12A ONLY)			
R1388	1-216-129-00	RES-CHIP	2.2M	5%	1/10W
R1389	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
		(ALL EXCEPT KV-21FE12A)			
R1389	1-216-077-91	RES-CHIP	15K	5%	1/10W
		(KV-21FE12A ONLY)			
R1390	1-216-025-91	RES-CHIP	100	5%	1/10W
R1391	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1392	1-216-295-91	SHORT			
R1393	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R1394	1-216-033-00	RES-CHIP	220	5%	1/10W
R1395	1-216-033-00	RES-CHIP	220	5%	1/10W
R1396	1-216-033-00	RES-CHIP	220	5%	1/10W
R1397	1-216-033-00	RES-CHIP	220	5%	1/10W
R1398	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1399	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1400	1-216-295-91	SHORT			
R1401	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1402	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1403	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1404	1-216-073-00	RES-CHIP	10K	5%	1/10W
R1406	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1407	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1409	1-216-043-91	RES-CHIP	560	5%	1/10W
R1410	1-216-295-91	SHORT			
		(ALL EXCEPT KV-21FE12A)			
R1411	1-216-033-00	RES-CHIP	220	5%	1/10W
R1412	1-216-635-11	METAL CHIP	220	1%	1/10W
R1413	1-216-091-00	RES-CHIP	56K	5%	1/10W
R1414	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1415	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1416	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R1417	1-216-035-00	RES-CHIP	270	5%	1/10W
R1418	1-216-045-00	RES-CHIP	680	5%	1/10W
R1419	1-216-295-91	SHORT			
R1442	1-216-103-00	RES-CHIP	180K	5%	1/10W
		(ALL EXCEPT KV-21FE12A)			
R1442	1-216-107-00	RES-CHIP	270K	5%	1/10W
		(KV-21FE12A ONLY)			

CRYSTAL

X1001	1-767-487-11	VIBRATOR, CRYSTAL	
X1303	1-579-973-11	VIBRATOR, CRYSTAL	
		(KV-21FE12A ONLY)	
X1304	1-567-505-11	VIBRATOR, CRYSTAL	
X1305	1-579-972-11	VIBRATOR, CRYSTAL	
		(KV-21FE12A ONLY)	

VB

* **A-1342-537-A VB (VAR) MOUNTED PC BOARD**

4-382-854-11 SCREW (M3X10), P, SW (+)

CAPACITOR

C901	1-107-667-11	ELECT	2.2μF	20.00%	160V
C902	1-130-491-00	MYLAR	0.047μF	5.00%	50V
C903	1-126-925-11	ELECT	470μF	20.00%	10V
C904	1-130-471-00	MYLAR	0.001μF	5.00%	50V
C905	1-106-383-00	MYLAR	0.047μF	10.00%	200V
C906	1-130-471-00	MYLAR	0.001μF	5.00%	50V
C907	1-107-638-11	ELECT	33μF	20.00%	160V
C908	1-126-925-11	ELECT	470μF	20.00%	10V
C909	1-161-830-00	CERAMIC	0.0047μF		500V
C910	1-104-999-11	MYLAR	0.1μF	10.00%	200V
C911	1-104-665-11	ELECT	100μF	20.00%	10V
C912	1-126-941-11	ELECT	470μF	20.00%	25V
C914	1-130-491-00	MYLAR	0.047μF	5.00%	50V

VB

Note:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION				REMARK
	CONNECTOR					
CN901 *	1-564-508-11	PLUG, CONNECTOR 5P				
CN903 *	1-564-506-11	PLUG, CONNECTOR 3P				
	DIODE					
D901	8-719-110-88	DIODE MTZJ-T-77-39				
D902	8-719-110-88	DIODE MTZJ-T-77-39				
D903	8-719-991-33	DIODE 1SS133T-77				
	TRANSISTOR					
Q901	8-729-017-06	TRANSISTOR 2SC4793				
Q902	8-729-017-05	TRANSISTOR 2SA1837				
Q903	8-729-423-33	TRANSISTOR 2SC3311A-QRSTA				
Q904	8-729-423-33	TRANSISTOR 2SC3311A-QRSTA				
Q905	8-729-119-76	TRANSISTOR 2SA1309A-QRSTA				
Q906	8-729-423-33	TRANSISTOR 2SC3311A-QRSTA				
	RESISTOR					
R901	1-249-401-11	CARBON	47	5%	1/4W	
R902	1-249-386-11	CARBON	2.7	5%	1/4W	
R903	1-249-414-11	CARBON	560	5%	1/4W	
R904	1-249-432-11	CARBON	18K	5%	1/4W	
R905	1-249-417-11	CARBON	1K	5%	1/4W	
R906	1-249-432-11	CARBON	18K	5%	1/4W	
R907	1-249-386-11	CARBON	2.7	5%	1/4W	
R908	1-249-414-11	CARBON	560	5%	1/4W	
R909	1-260-312-11	CARBON	47	5%	1/2W	
R910	1-216-476-11	METAL OXIDE	180	5%	3W	
R911	1-249-403-11	CARBON	68	5%	1/4W	
R912	1-247-815-91	CARBON	220	5%	1/4W	
R913	1-249-403-11	CARBON	68	5%	1/4W	
R914	1-249-410-11	CARBON	270	5%	1/4W	
R915	1-249-417-11	CARBON	1K	5%	1/4W	
R916	1-249-417-11	CARBON	1K	5%	1/4W	
R917	1-249-417-11	CARBON	1K	5%	1/4W	
R918	1-247-807-31	CARBON	100	5%	1/4W	
R919	1-247-807-31	CARBON	100	5%	1/4W	
R920	1-249-416-11	CARBON	820	5%	1/4W	
R921	1-249-429-11	CARBON	10K	5%	1/4W	
R922	1-249-397-11	CARBON	22	5%	1/4W	
R923	1-249-401-11	CARBON	47	5%	1/4W	

REF.NO.	PART NO.	DESCRIPTION	REMARK
		ACCESSORIES AND PACKAGING	
	1-501-730-41	ANTENNA, TELESCOPIC (EXCEPT KV-20FS12/20FV12)	
*	4-073-838-01	BAG, PROTECTION	
	4-073-495-01	CARTON, INDIVIDUAL (KV-20FS12 ONLY)	
*	4-070-554-02	CARTON, INDIVIDUAL (KV-20FV12 ONLY)	
*	4-073-479-01	CARTON, INDIVIDUAL (KV-21FM12/21FE12/A/C ONLY)	
*	4-073-839-01	CARTON, INDIVIDUAL (KV-21FV12/C ONLY)	
	4-073-494-01	CUSHION ASSY, LOWER (KV-20FS12 ONLY)	
*	4-070-563-01	CUSHION ASSY, LOWER (KV-20FV12/21FV12/C ONLY)	
*	4-073-477-01	CUSHION ASSY, LOWER (KV-21FM12/21FE12/A/C ONLY)	
	4-073-493-01	CUSHION ASSY, UPPER (KV-20FS12 ONLY)	
*	4-070-562-01	CUSHION ASSY, UPPER (KV-20FV12/21FV12/C ONLY)	
*	4-073-478-01	CUSHION ASSY, UPPER (KV-21FM12/21FE12/A/C ONLY)	
	4-075-509-31	MANUAL, INSTRUCTION (KV-20FS12 ONLY)	
	4-075-501-31	MANUAL, INSTRUCTION (KV-20FV12 ONLY)	
	4-075-509-41	MANUAL, INSTRUCTION (KV-21FM12/21FE12/A/C ONLY)	
	4-075-501-41	MANUAL, INSTRUCTION (KV-21FV12/C ONLY)	
	1-417-182-11	CONVERTER (EAC-25) (ALL EXCEPT KV-20FS12/20FV12)	
		REMOTE COMMANDER	
	1-418-387-11	RM-Y168 REMOTE COMMANDER (KV-20FV12/21FV12/C)	
	4-978-977-01	BATTERY COVER FOR RM-Y168 (KV-20FV12/21FV12/C)	
	1-418-853-11	RM-Y172 REMOTE COMMANDER (KV-21FM12)	
	3-709-322-01	BATTERY COVER FOR RM-Y172 (KV-21FM12)	
	1-418-852-11	RM-Y173 REMOTE COMMANDER (KV-20FS12/21FE12/A/C)	
	3-709-322-01	BATTERY COVER FOR RM-Y173 (KV-20FS12/21FE12/A/C)	

Sony Corporation
Sony Technology Center
Product Quality Division
Service Promotion Dept.

9-965-879-91

English
2000AS74325-1
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2000.3

Self Diagnosis Supported model

SERVICE MANUAL

BA-5 CHASSIS

MODEL NAME	REMOTE COMMANDER	DESTINATION	CHASSIS NO.
KV-20FS12	RM-Y173	US	SCC-S40A-A
KV-20FS12	RM-Y173	CND	SCC-S41A-A
KV-20FV12	RM-Y168	US	SCC-S40B-A
KV-20FV12	RM-Y168	CND	SCC-S41B-A
KV-21FE12	RM-Y173	E	SCC-S38A-A
KV-21FE12A	RM-Y173	E	SCC-S38F-A
KV-21FE12C	RM-Y173	E	SCC-S38B-A
KV-21FM12	RM-Y172	MX	SCC-S39A-A
KV-21FV12	RM-Y168	E	SCC-S38C-A
KV-21FV12C	RM-Y168	E	SCC-S38D-A

CORRECTION - 2

SUBJECT: IC1001 AND IC1301 P/N CORRECTION

Correct the service manual as shown.
File this Correction with the service manual.

☞ : Corrected Item

Section 8: Electrical Parts List - Page 66

Incorrect

	REF. NO.	PART NO.	DESCRIPTION
	IC1001	8-759-658-03	IC M37273MF-258SP
⚠	IC1301	8-752-092-17	IC CXA2131AS (ALL EXCEPT KV-21FE12A)

Correct

	REF. NO.	PART NO.	DESCRIPTION
☞	IC1001	8-759-834-21	IC M37273MFH-051SP
⚠ ☞	IC1301	8-752-098-79	IC CXA2131CS (ALL EXCEPT KV-21FE12A)

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9-965-879-92

HISTORY INFORMATION FOR THE FOLLOWING MANUAL:

SERVICE MANUAL BA-5 CHASSIS

MODEL NAME	REMOTE COMMANDER	DESTINATION	CHASSIS NO.
KV-20FS12	RM-Y173	US	SCC-S40A-A
KV-20FS12	RM-Y173	CND	SCC-S41A-A
KV-20FV12	RM-Y168	US	SCC-S40B-A
KV-20FV12	RM-Y168	CND	SCC-S41B-A
KV-21FE12	RM-Y173	E	SCC-S38A-A
KV-21FE12A	RM-Y173	E	SCC-S38F-A
KV-21FE12C	RM-Y173	E	SCC-S38B-A
KV-21FM12	RM-Y172	MX	SCC-S39A-A
KV-21FV12	RM-Y168	E	SCC-S38C-A
KV-21FV12C	RM-Y168	E	SCC-S38D-A

ORIGINAL MANUAL ISSUE DATE: 2/2000

ALL REVISIONS AND UPDATES TO THE ORIGINAL MANUAL ARE APPENDED TO THE END OF THE PDF FILE.

REVISION DATE	REVISION TYPE	SUBJECT
2/2000	No revisions or updates are applicable at this time.	
3/2000	Correction - 1	Block Diagram, A Board Voltage Table, Parts List (All Variant Parts Identified)
2/2002	Correction - 2	IC1001 and IC1301 P/N Correction

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9-965-879-03